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THE BUILDING NEWS

AND ENGINEERING JOURNAL.

EXTERNAL FEATURES.

THE accessory accompaniments of buildings have always been a sign of a cultivated age and the progress of the arts of peace. The early strongholds, as observed in the castellated and domestic architecture of England and Scotland, had nothing outside the walls; the attempts at decoration were few, and only those which belonged to the requirements of defence, as may be seen in the 14th-century castles and houses of Scotland. The simple keep was plain and severe in outline and structure. Everything in the form of ornament was absent except the corbelling of the parapet, and the circular angle bartizan corbelled out at the corners, as we find it in many castles of the North. Dalgell Castle, Lanarkshire, and Dunglass Castle are examples of this very simple but effective architecture. With the increase of domestic safety and comfort various additions were made to buildings of this class. The enlargement of the window was one of the earliest indications of the palace fortress. The feudalism and spirit of chivalry of the Middle Ages promoted a more pretentious style, so that by imperceptible degrees we arrive at the splendour of the Tudor Age, in which a brilliant Court led to the rich accessorial architecture of the Elizabethan period. The Elizabethan architecture was pre-eminently one of accessories. Such, indeed, were the great houses, Kenilworth and Burleigh, of Holland and Hatfield, of Wollaton Hall, and of numerous others. These buildings were rich in external features, terraces and balustrades, arcades and colonnades.

Our main purpose is not to descant on the historical development of external features, however inviting the subject may be, but to speak of a few of the details which add to the completeness and appearance of buildings, from a more practical point of view, and first let us say a word on eaves. The eaves or the cornice is one of the most expressive finishes of buildings. We know how bald and mean a building is with the walls carried up and finished with only a coping, or with a mere line of guttering below the eaves drip. The eaves is the natural mode of covering the wall; it is the prototype of the cornice, which evidently was suggested by it. In one form or the other every age has adopted the feature; but the modern architect looks at it merely as a conventional detail, without often thinking of its meaning and purpose. Thus the aspect should have a definite relation to the projection of eaves; a very sunny aspect ought to have more shelter than a sunless one. In this climate the south and west sides of a building require protection both from the sun and the rain, and on those sides the projecting eaves or cornice is of primary value. Shelter and shade are the main objects of the eaves, and therefore its projection and prominence ought to be governed by the consideration of aspect or exposure to the sun and prevailing winds. Height of building will govern also the projection, the higher structures requiring the deeper projection. Attention to these points of design is not usually seen. Besides projection there is depth. There is a proper angle to be observed from the drip of outer member to the lower member of the bed-mould: if the lower members are deep, the front will be discoloured by the trickling streams which descend the cornice and front. A well-proportioned cornice is one which secures a good drip on the outer lip of upper moulding, or on the lower edge of the corona, and the members below the planceer, or soffit, should be so arranged, one within the other, as not to catch the droppings, but to relieve the deeper shadow cast by the corona. Too great a projection is a disadvantage, as it overshadows the windows and assists the wind pressure. The Italian examples of cornices do not afford any reliable rule for the projection of cornices in this country in relation to height of building, though a list of proportionate heights are given of some noted cornices in Gwilt's "Encyclopædia." These figures give about one-fifteenth of the height of building as the mean height of cornice, and at an angle of profile of 45° this proportion would be also that of the projection.

An important accessory, alike as a protection and shelter to the walls and as a covered walk, is the colonnade. It surrounded the outer courts or atria of Roman houses, and was, in this sense, both a shelter from the sun and a covered passage-way of communication. In the capacity of ornament the modern architect chiefly uses it; but its employment is seldom dictated with any reference to aspect. We see it on the sides of houses, serving only to darken the apartments and as a decorative appendage. The south, south-east, and west are the only aspects which are appropriate to its use as a shelter. As it casts a deep shadow, the windows opening under it should be large in proportion to the room they light.

As a passage-way and communication, a colonnade is a useful adjunct, though we find it seldom employed in this manner. The modern verandah is a substitute of less architectural dignity. Instead of the flat above the colonnade, which serves as a walk, there is a lean-to roof covered by zinc; the framework is generally of cast-iron, of ornamental design, but flimsy. These erections are, happily, less seen than formerly. We do not say that a verandah may not be made a very useful and comfortable addition to a front exposed to the weather, or to the sea—in these situations it serves as a screen to the windows—but let it be substantial, and be properly united to the building. Between a projecting gable, bay, and a porch, or bay-window, a verandah can be turned into account, and be, indeed, an architectural addition. Its objectionable aspects are when it is put up as an ironmonger's addition to a front for mere show; when its design consists of a number of open cast-iron pilasters of elaborate pattern, and is placed before a perfectly plain house front; where it can seldom be used as a retreat. Sometimes it is inclosed by glass sides, and then can be used as a conservatory to the room—certainly a more excusable object.

The conservatory is an adjunct that has hardly received the attention it deserves: the house is not always planned with reference to one, and the consequence is that, when the horticultural builder erects a conservatory, he does so without the slightest regard to the house. The result is evident externally. It looks a makeshift; it is stuck on the side of a gabled end as a lean-to or span-roofed building, or made to project at the side of a bay window. The architect has generally little to do with these erections. As a show house or floral apartment for the display of plants, the conservatory ought to be designed to unite with the building and be made an important feature externally. Perhaps the principal caution is that relating to junction with main building. It ought, if possible, to form a part of the plan, not be tacked on; the gutter junction should be avoided; if a span roof is adopted, let its end abut on the wall, not the side, or let it be an independent structure joined by a glazed corridor. If at the side of a house, it may be made to project and have an ornamental semi-domical termination, appearing as a wing. The lean-to form is always unsatisfactory unless its side is broken by a gable.

The porch is another feature that is frequently spoiled. It is usually placed in the centre of the building, and in such a position it ought to be made important; but the ordinary porch is usually a box-like excrescence, with scarcely any room for a seat or two to be placed in it, and hardly deep enough to allow the doors to swing. If a porch is required in the centre, it is better carried up as a projection, and be made large enough to exhibit choice plants, and to contain seats. It ought to form a feature of the architecture, and avoid the "tacked-on" appearance of an afterthought. In the older houses, like that of Moreton Hall, it is a large and commodious addition to the front, three stories high. But the central position is not necessary. A porch at the side, or

projecting at one end, is generally more conducive to internal comfort and convenience. Sometimes we see it carried up as a tower, making a feature. This development of the porch has not been attempted to any extent. The feature at least is one deserving of more attention than it generally receives at the hands of architects of our domestic structures.

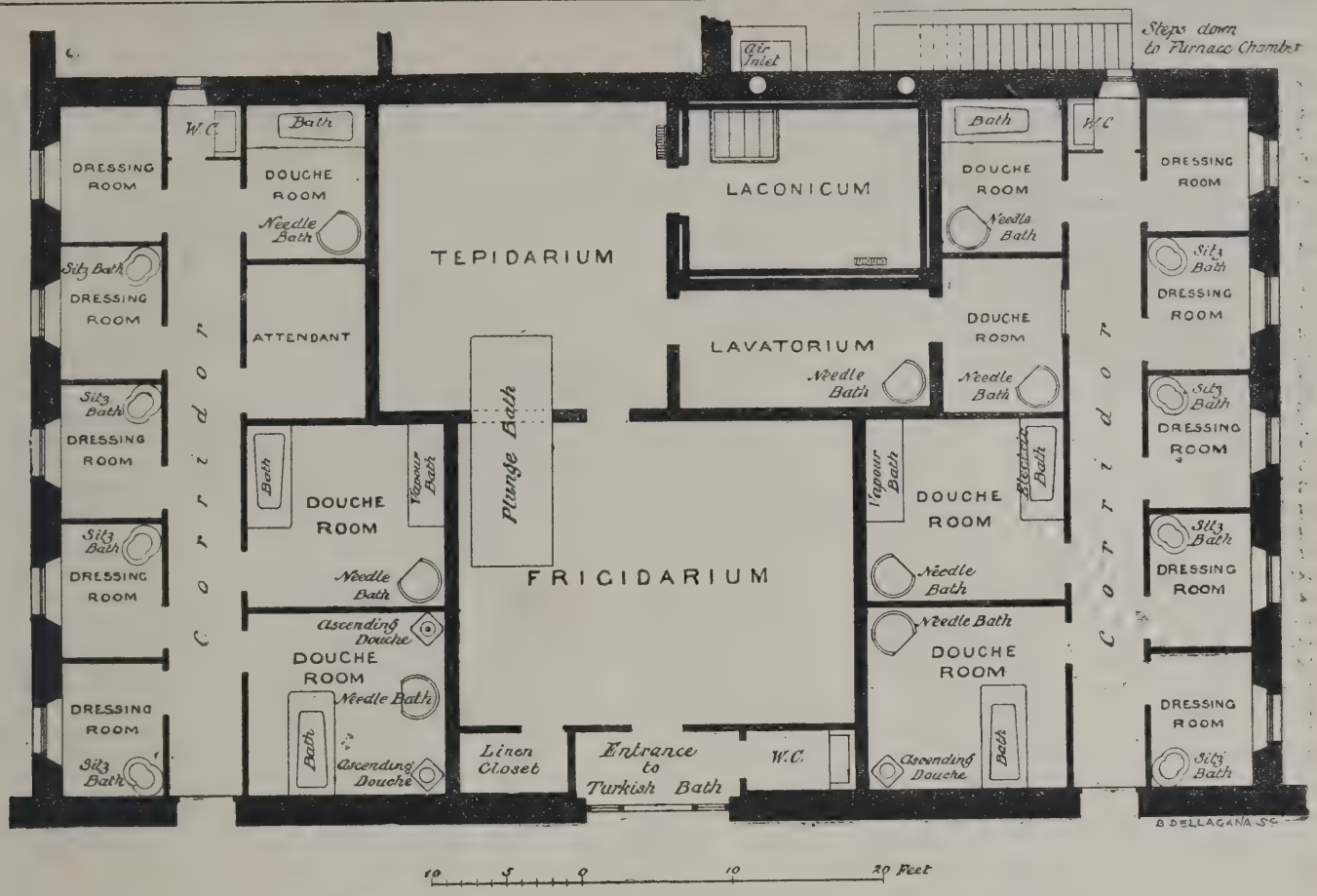
THE ARCHITECT'S PUPIL.

THE old custom of apprenticeship, or of "serving articles," is a traditional mode of teaching a trade or a profession which is highly respected, and we have lately seen that it has still many advocates amongst those who desire a reform in architectural education. The results of the system, whatever may be its weaknesses, have compared favourably with the French atelier routine so well described by Mr. Arthur L. Vye Parminter in our pages. Incident, however, to the system are several breaches of contract between the parties to the indenture which are deserving of notice, and we occasionally hear of cases in which the pupil appears to have very little redress. As the law is at present, the master seems to have the best of the terms. He can draw up the indentures in such a manner as to bind the apprentice to the strictest discipline and obedience, and make him fulfil all the duties of a clerk under penalties. Breaches of covenant on the part of the master to instruct are not so easily established, though in law an action can be sustained against him, notwithstanding the master may set up in answer, misconduct on the part of the apprentice. The architect's pupil is expected to do more for himself than the novice in any other calling. A vocation which he knows nothing about except that it is something to do with drawing, is open to him. If he is industrious and clever he may find something profitable to do; but if he is not, and his master has little or nothing to do, or, on the other hand, is so busy that he cannot look after his pupils, the pupil is left helplessly to drift for himself, to spend his office hours in various games improvised out of the office furniture and instruments, or to become a mere office drudge without the slightest hope of ever learning the profession. We are not far wrong in saying that quite 30 per cent. of those who enter architects' offices leave them for something else, while another 20 per cent. make but little headway in the profession. And the fault is mainly in the system, partly through the folly and want of judgment of parents and guardians, and partly from the indolence or inaptitude of the youths themselves. Youths are apprenticed by their parents without any acquiescence on the part of the former. How can a boy of sixteen know whether he is fit for architecture or any other calling. There may be sometimes evidences of a capacity which appear to justify a parent placing his son with an architect, but it is quite impossible to conclude that his expectations are well founded. A probationary period is necessary to confirm the choice, and this is unfortunately very seldom afforded. After a few months or a year or two have been passed in the office, the youthful pupil finds he has made a wrong choice of a profession; but it is too late to alter his mind. He settles down a passive or an apathetic recipient of his master's instructions, or, if of an adventurous or turbulent disposition, openly revolts against the restraints imposed. With the mutual consent of his guardians and master, the indentures may be cancelled—a course which cannot be followed without a serious sacrifice of time and money. This course, whatever the consequences, would be probably a gain in the long run, for it would not seal a young man irrevocably to a profession he could not succeed in. Such, however, is the general fate which awaits many, as it is very seldom that the mutual consent of all the parties to the indenture can be obtained.

A more general grievance than that of mistaken choice comes to us from many sources, and it is one that calls for some legislation. There are many professional men without a business or facilities for teaching who take pupils. They take them for various reasons: some to obtain assistants to enable them to go in for competitions, some to look busy, others to replenish their coffers. Granted that a young architect has little or nothing to do; he may take a pupil to instruct and to occupy his time, and we do not deny that many men of qualifications for instruction open their offices with the best of motives, and are honestly desirous of fulfilling their part of the covenant towards their pupils. But we are sorry to say there are some men who hardly think it to be their duty to fulfil their part of the contract, if the pupil is indifferent; and the following may be taken as an actual example which has come under our notice:—An architect of good social position, and of university education, in London, advertises for a pupil. A well-educated youth, who has lost his father, is articled in due form, and for some time is engaged on ordinary work, such as tracing, writing out dilapidations, and other work of this description. But these duties are infrequent: the master often absents himself for days together, comes late, and often leaves his pupil and assistant to their own "sweet" devices. The business at length falls off—architectural practice does not pay, and the master betakes himself to journalism. He starts a monthly review for a certain class, quite outside the profession, and his pupil consents to assist him and devote himself to the paper by writing "pars," and doing much of the sub-editing work. The journal, which is beginning to pay, soon absorbs the whole time of the pupil. His term of articleship expires, and he enters into an arrangement to serve his master in the new capacity, and to obtain advertisements, at a nominal salary. The questions that occur in connection with this case are, Has the pupil any legal redress? His articles having expired, can he bring an action against the master for not teaching him the profession? Does the pupil's consent to assist his master in the new business before the term expired disqualify the pupil or his guardians from taking legal proceedings? These are points which are of importance to many pupils similarly situated. The law is pretty clear as to the first question: The master is bound to teach the trade or profession mentioned, and if he neglect to do so it is a clear breach of the covenant, for which an action would lie. It would be no excuse to say the pupil misconducted himself, though, if he quitted the service without leave of his master, the latter would have a good defence. The consent of the pupil to assist his master in another vocation would not disqualify his guardians from taking proceedings, supposing the pupil was under age. All the parties are required to give their consent before the indenture is cancelled. In the instance to which we have referred, the pupil took kindly to his altered circumstances: he had learned little or nothing of architecture or building, and journalism offered him an easy alternative—the work was light and the hours short.

Irrespective of the legal aspect, these are considerations of moment. It may be an advantage for the pupil to engage his time upon something that may prove lucrative: he may be better fitted for literary than for architectural work. As there are two parties to every contract, and as the two most directly concerned are the pupil and his master, the question arises whether any intervention on the part of the guardian is desirable. Of course, this question will depend on circumstances in each case.

Of the many disagreements between masters and pupils, we may mention removal of office. An architect sometimes changes his place of abode: he removes to some other town, and wishes to take his pupil with him. The latter refuses to go, as being inconvenient. It is a question in law whether a master can enforce the attendance of his pupil under such circumstances, and it is certainly one of the points to which attention should be drawn by those who prepare indentures of apprenticeship. This accident befalls many pupils. In one instance, on the master leaving the town, he arranged with another architect to take his pupils, who were then proficient as assistants. The complaints from pupils which we hear are numerous, and other well-authenticated cases we shall be glad to receive. One complains that the earlier period of the term is spent in the capacity of general messenger, in the copying of specifications and letters, in tracing and other mechanical duties; another says he is one of four pupils in an office with only one assistant; he has to copy letters, "square dimensions," run errands, put the office straight, endorse letters, &c. A third says that after his articles expired he could not get taken on at a nominal salary, as the master had another pupil in view. The crowding of pupils in offices is another common grievance, and under the present law an architect can take as many pupils as he pleases. The infrequency of visits from the master, who may be too busy, or otherwise engaged, to devote attention to his pupils is one of the crying evils of the system. There are still Pecksniffs in the profession, who take advantage of the docility of youths and the ignorance of their guardians. Many of the grievances enumerated would be checked if a compulsory preliminary examination were established. Every pupil should be required to pass an entrance examination before being articled. The "taste for drawing" test is now below the standard, and opens the door to many who are in many other respects unqualified, and mentally incapable of making architecture a successful profession. The premium system is more in fault. Pupils who can pay premiums are taken, quite regardless of any capacity or fitness for the profession. The whole weakness of the pupilage system springs from this fact. Young architects struggling to support themselves, and men who regard the taking of pupils as one of the legitimate opportunities of making money or of keeping their business going, find it too powerful a temptation to resist. One suggestion is, that the premium should be abolished, and a gradual salary from the commencement of the term substituted for it. Many pupils are taken now in this way, and on the whole the payment by instalments is to be preferred, as there is more inducement to look after the pupil than when one sum is paid at the signing of the indentures. We think it is time the profession should lay down some rules on the subject. The examination schemes that are proposed are measures in the direction required. A new form of apprenticeship is desirable, in which the subject of the fitness of the youth will be taken into consideration, and the master will be required to devote a certain portion of his time to the personal instruction of his pupils, to give them facilities for attending classes and lectures, and for the necessary examinations for the profession. Till these safeguards are taken in the interests alike of the pupil and the profession, the pupil will continue as now to be the victim of a system which encourages the indiscriminate crowding of offices with youths unfitted for the vocation of architect, and the machinations of designing masters and adventurers.



DUNBLANE HYDROPATHIC ESTABLISHMENT.—PLAN OF BATHS.

THE HYDROPATHIC ESTABLISHMENT AND ITS BATHS.—IX.

By R. OWEN ALLSOP, Architect.

(Author of "The Turkish Bath: its Design and Construction.")

VAPOUR BATHS are (1) whole, (2) partial, or (3) local. The most perfect form of the first of these varieties—the Russian bath—I have already described. The partial bath consists of the vapour box, which allows the head of the bather to be free, and is too simple and well-known to need detailed description here. Local vapour baths are for application to the limbs or parts of the body: in the first case, the patient sits with his leg or arm in a tube, supplied by means of pipes with steam; and in the latter the vapour is applied in metal containers, variously shaped to fit the different parts of the body.

Nothing further need be said as to the whole vapour bath, excepting that it may at times be provided in the shape of a small glass chamber within a large douche-room, the walls of the bath being of suitable, well-seasoned wood frames and best rolled glass, the glass being fitted in chamois leather, with screwed fillets and brass cups, as recommended for glazing in the hot rooms of the Turkish bath. A door would be formed in one of these glazed walls. The advantage of a "whole" vapour bath thus constructed is that it economises steam, and the attendant can observe the bather on all sides, without himself entering and staying in the vapour, as we often find him compelled to. This bath need not be more than 7ft. by 4ft. by 7ft. high, and if made a little wider accommodates two bathers. It should have steam fittings, as in the ordinary Russian bath, and be as well provided with means of ventilation. Such a chamber may also be used as a medicated whole vapour bath, and, if supplied with hot air by means of a duct, as a special private Turkish bath.

Of the vapour box it may be said that it should be placed in the douche-room, or in a separate chamber connected with the douche room. This chamber should be light, and provided above with a ventilator sufficiently large and effective in working, so that the air of the room may be kept free from any vapour that may escape from the box during the time it is in use, for the object of the physician in prescribing partial steam baths may be that the patient shall be able to breathe dry air.

There are some whole vapour baths at the *Kaiserbad* establishment at Aix-la-Chapelle that are of a peculiarly economical construction. The lower portion of the bath is much of the shape and size of the ordinary old wooden vapour box, but the head of the bather is cased in with a cabinet-shaped hood with glass-panelled doors. Thus, whilst comfortably at ease, and having plenty of room whilst seated, he can look out into the bath-room. These baths are employed for the vapour that naturally arises from the thermal waters, the water being conducted under a grating in the bath by means of suitable conduits.

Medicated vapour baths are either whole or partial. They are most economically provided by passing the steam for the bath through a tube containing the medicating substance. If along the main steam-pipe supplying the vapour baths, cylinders connected by two short pipes be arranged, these can be filled with the substance required to be absorbed by the steam. Each cylinder would have its separate medicating agent, and would require stop-cocks on the short connecting pipes, and a valve also on the main pipe, so that the flow of steam could be properly directed. Medicated baths, however, are of doubtful therapeutic action, and do not properly concern hydropathic principles; but they are often placed in public bathing establishments, and this mention of them may not be wholly useless.

Having already dealt fully with the Turkish bath in these columns, and having illustrated a first-class Russian bath and described minor varieties of vapour baths, I have said sufficient as to class (*b*) of the list given, p. 753 *ante*. From sudorific expedients, therefore, I now proceed to class *c* —general baths—the baths of

THE DOUCHE ROOM.

This is a most important feature in any system of baths, and much has already been said as to its general position in regard to other baths. The purposes that the general douche room fulfils may be accomplished, if desired, by several smaller rooms. In hydropathic establishments it is generally found most convenient to have several small douche-rooms—two or three in place of the one large room. In some of the German bath-houses we find it is frequently the custom to concentrate all the douches, &c.—the "general" baths—into one large chamber, called the *Grosser Doucheraum* or the *Douchensaal*. Such an arrangement is in every way best suited to public bath-houses where the baths are of a medical nature; but at hydropathic establishments more privacy is required by the patient. It is, therefore, well to provide at least two douche-rooms to each set of baths. By so doing patients may have the rooms to themselves and their attendants. Were there but one room this would be impossible, without delay and much consequent inconvenience.

This is an important point. The errors relating to it may be best avoided by planning so that it will be possible for each bather to have perfect privacy. Separate dressing-rooms and two or three douche-rooms, conveniently connected, will insure this. In the arrangement of the baths at the Dunblane Hydropathic Establishment, designed by Messrs. Kinnear and Peddie, this plurality of douche-rooms has been made a feature. A patient entering at the end of the bathers' corridor would be conducted to one of the dressing-rooms arranged on one side of the corridors. If his treatment did not include the packs or compresses that are administered in the dressing-rooms, he could proceed direct to one or another of

the douche-rooms, and only require to cross the corridor. There being three douche-rooms to each set of baths, it would be unnecessary to wait about, and, for the time being, each bather can have the room to himself and attendant.

The plan given shows the position of the various bathing appliances. In either set of baths each douche-room has a slipper-bath and complete needle-bath, with sprays and showers, &c. One room has, in addition, a partial vapour-bath and electric bath, and another appliances for the ascending douche. The ladies' set of baths are placed on the left-hand of the plan. The entrances to Turkish bath and to the two corridors for the miscellaneous baths are connected by covered ways with the residential portion of the establishment.

A douche-room may be fitted up with all kinds of elaborated contrivances; but what has been said as to the douche-room for the Turkish bath applies with equal force to the douche-room for "general" baths at the hydropathic establishment. More attention, however, should be bestowed upon the means of regulating the temperature of the water in the latter case, for, as pointed out in a previous article, hydropathic treatment is as much dependent, in its effects, on the *temperature* of the water, as on the mode and duration of its application. The thermometer-regulating valve, therefore, will here be useful, enabling, as it does, the attendant to apply douches, sprays, and other tonic baths at the proper and most desirable temperatures.

The arrangement and construction of water-fittings for a douche-room I fully described and illustrated in No. VIII. article on the "Turkish Bath," published in the Building News Nov. 23, 1888. The needle-bath, shower, spray, wave, and douche were then explained, and the explanation stands good in the present case. These fittings should be well and handsomely made, bungling makeshifts creating a very unfavourable impression on the visitor to the establishment.

(To be continued.)

SHADOWS.—III.

BEFORE proceeding to consider curved surfaces and their shadows, we will continue to observe the effect of the shadows thrown by a projecting body on planes or mouldings retreating more or less from this projecting body.

In the last example (Fig. 8) we noticed that the length and size of a shadow thrown by a body projecting from a plane, is proportional or equal to the distance of the body from the plane which receives the shadow thrown.

Let us now find the form of the shadow thrown by a column on to the more or less projecting mouldings of the doorway (Fig. 9).

We must always follow the same rules; that is, to draw the various lines at 45° in both plan and elevation, and find the intersection of the plane of their projections with the surfaces receiving the shadows.

In Fig. 9 we have the plan *a b* and the elevation A B of the column. At *a b* and A B we draw the lines at 45°. In the plan the shadow lines from *a* and *b* meet the moldings at *d d*, *g g*, *e e*, &c. We must therefore raise the projections of these various points in the plan in order to obtain the same points on the corresponding mouldings in the elevation. These projection lines are not indicated in Fig. 9, as they would tend to complicate the drawing. The shadow of *a b* in the plan meets the wall-plane at *c c*; by projecting these points and finding their intersection with the shadow lines from A B in the elevation, we get the points C C, the shadow of A and B. In the same way by projecting the points *d d*, *g g*, *e e*, &c., we find the points D D, E E, G G, &c., in the elevation. The light striking at O casts a shadow as far as P, and forms the shadow P H H, interrupted by the shadow H H thrown by the column. The shadow of the doorway thrown against the wall from S S to T V, as well as the remaining shadows in Fig. 9, are easily found by following the ordinary rules used for the preceding examples.

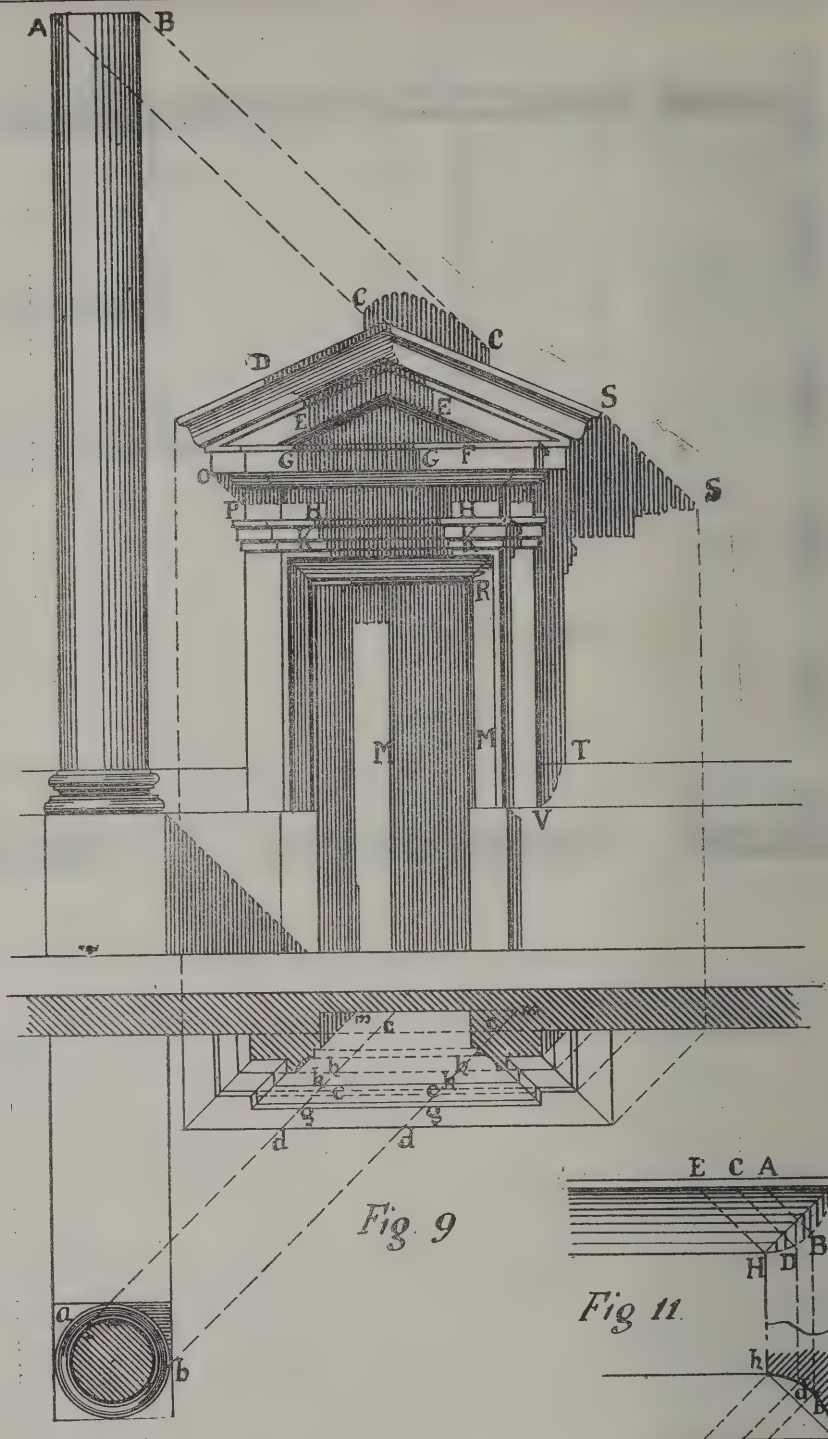


Fig. 9

Fig. 11

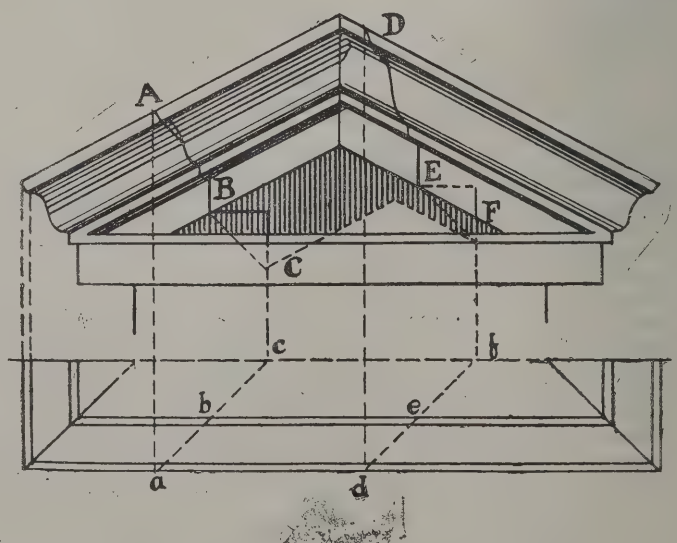
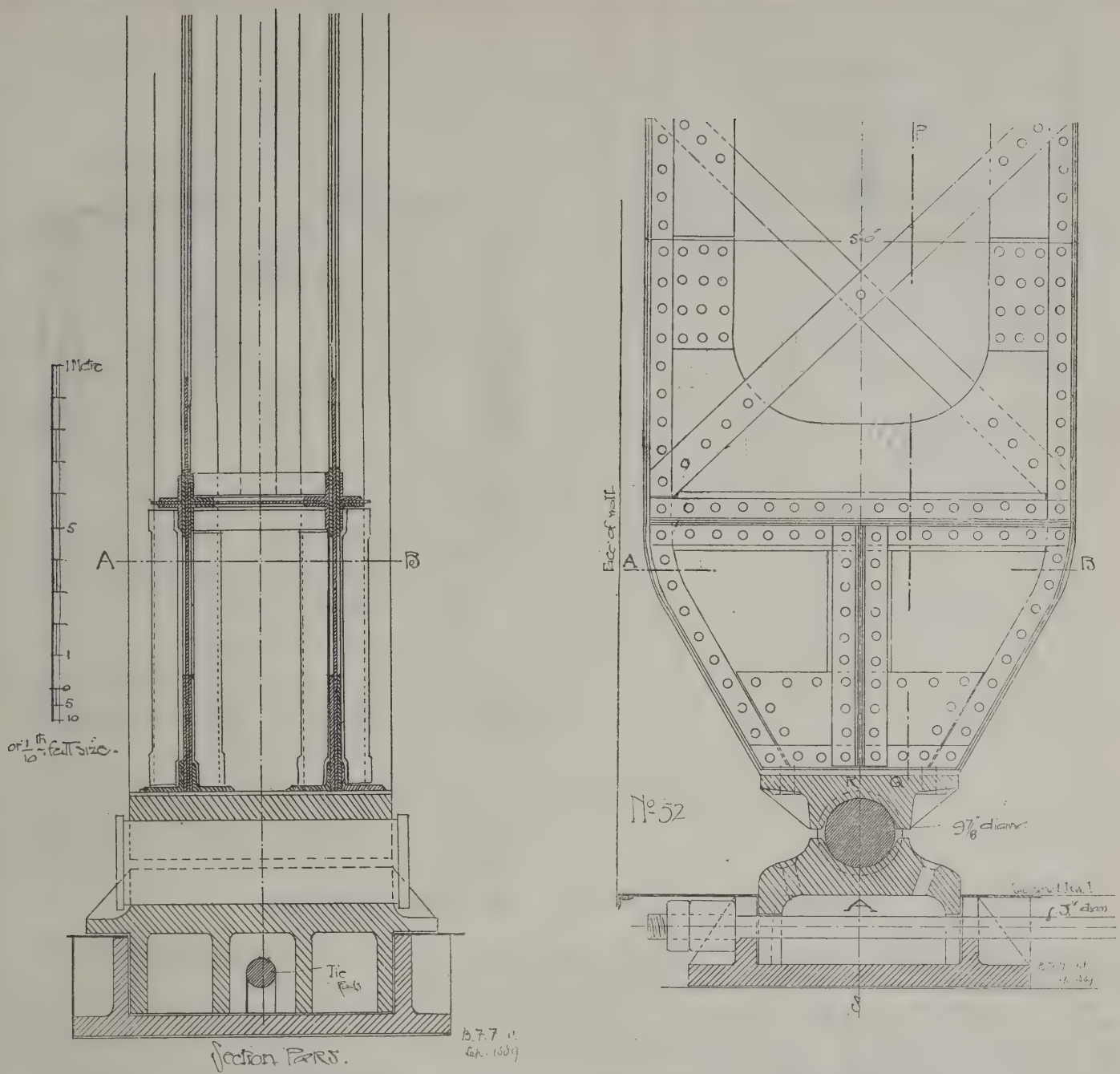


Fig. 10



CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.

The mouldings of the pediment being inclined to the horizontal plane, their shadows will change in proportion as the angle becomes greater or less. To draw the shadows of the detail (Fig. 10), we must first find the section of the moulding on both sides of the pediment. We will take a point, *a*, in the plan, and the corresponding point A in the elevation, and draw *a c* at 45° in the plan. By raising the points *a b c*, we get the section of the mouldings A B C at 45°. The plane of the shadow at 45° is the plane A *a c* C. This plane cuts the mouldings on plan at the points *a b c*, and in the elevation at A and B; therefore, by drawing the shadow lines at 45°, we find the shadows of A and B. In the same manner the plane D *d f* F gives us the shadows at D E F. The shadows at A B C are evidently larger than those at D E F.

In Fig. 11 we have a detail of the moulding at the angle R (Fig. 9). In both plan and elevation we draw lines at 45°, at any given points *e c a* and E C A, meeting the plan of the moulding at *h d b*, and find the intersection of the projections of *h d b* with the lines from E C A at H D B. The moulding is a quarter-circle drawn with the centre *a*; if with the same radius and the corresponding point A in the elevation we describe the quarter-circle, we find that the circumference passes by the points H, D, and B, as it does in the plan at *h d b*. Thus we see that the shadow of mouldings at an angle as at R, is the same in form as the plan or section of the moulding, of whatever form it may be. The student would do well to draw out the angle shadows of different kinds of mouldings; a little practice will enable him to put in at once the casual shadows as at Figs. 10 and 11, without having recourse to the constructional lines.

ARTHUR VYE-PARMINTER.

Palais des Beaux Arts, Lille.

CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—VII.

By BANISTER FLETCHER, JUN., A.R.I.B.A

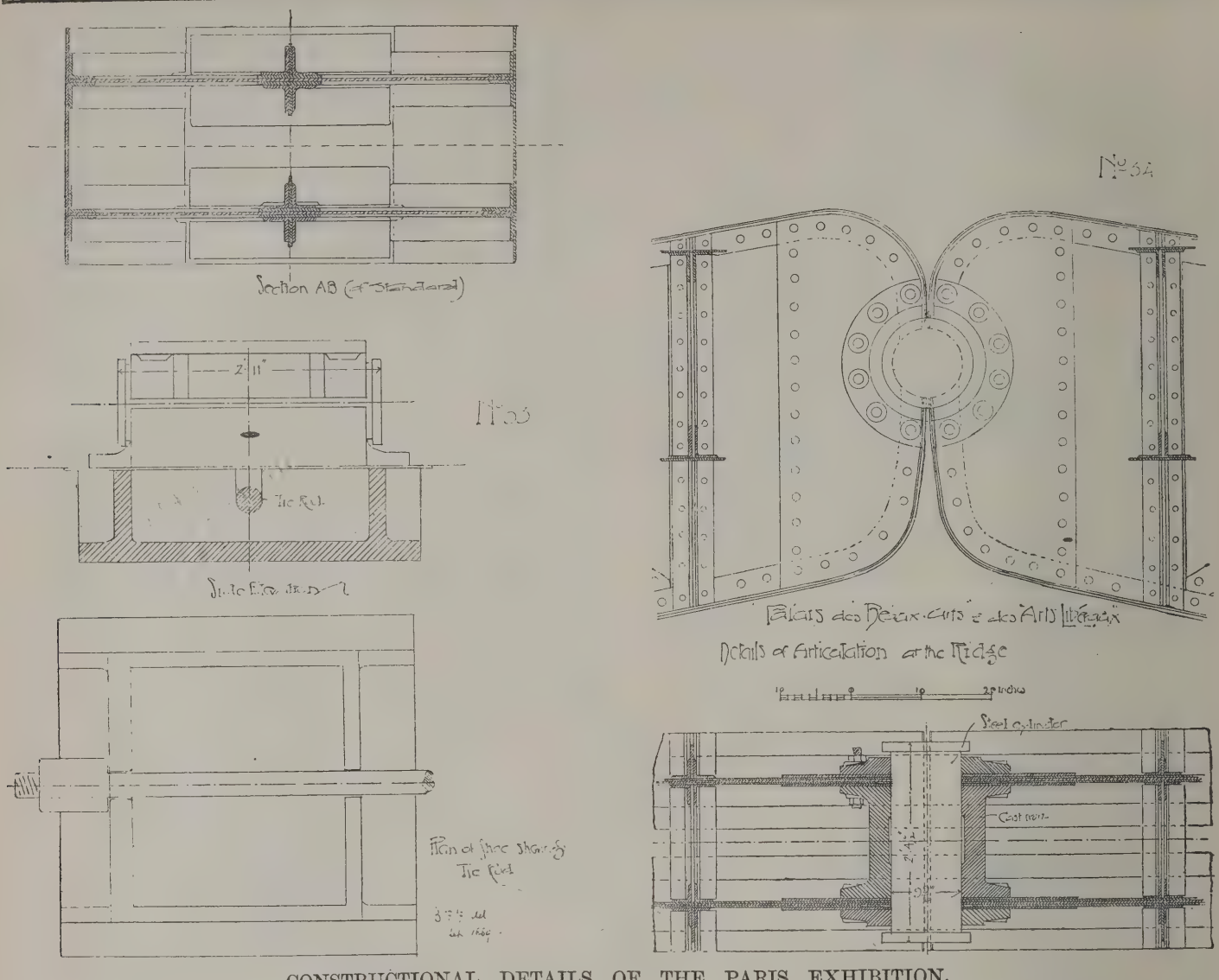
IN the "Palais des Beaux-Arts," the glazing extends to the sixth purlin, and the light is regulated by a "velarium" above the ground-floor picture galleries. In the "Palais des Arts Libéraux," the glazing is stopped at the fourth purlin. The principals consist of a double truss (No. 50) each having its flanges, webs, and angle irons, the distance between the webs being 1ft. 6in.; they are connected by upright struts formed of sheet-iron, hollowed out in the centre, and held by two angle-irons riveted to the back of the purlins and the uprights framing their support. I give in Nos. 51, 52, 53, and 54 drawings to a large scale of the upper and lower articulations, and of the composition of the trusses themselves.

The foundation plate, which is hollowed on its upper surface, is bolted down to the stone piers, into this slides the top portion of the bed plate, which in its turn receives the circular steel pin, upon which the foot of the principal rests. The box A was filled with sand, by withdrawing or adding to which the absolute levels of the principals were preserved.

The three sheets of drawings given herewith, one-tenth full-size, explain this very fully. They are taken from drawings given by M. Contamin, the engineer, and M. Formigé, the architect of "Palais des Beaux Arts," &c. Fig. 54 is a drawing, also one-tenth full size, of the elevation and section of the articulation at the top, from which it will be seen that the two tops of the trusses are not connected in any way, but simply rest against this cylinder, which is 2ft. 4½in. long and 9 9/10in. in diameter, the ends of each half-truss being considerably strengthened by plate-iron, and at the articulation by cast-iron plates and bolts. It may be mentioned here that the tie-rod to the base is in three lengths, and goes underneath the ground itself.

THE APPOINTMENT OF METROPOLITAN DISTRICT SURVEYORS.

THE Building Act Committee of the London County Council has had under consideration for some time the desirability of effecting some reform in the system hitherto followed for the election of district surveyors in the Metropolis. On Tuesday last the committee submitted to the



CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.

Council a long report, in which were embodied the following recommendations, new and important features being 2 *c*, 2 *g*, and 4 :—

"(1) That no person shall be accepted as a candidate for the appointment of district surveyor unless he shall have attained 28 years of age, and be under 50 years of age, and that every such candidate shall deliver with his application satisfactory evidence of his age.

"(2) That every candidate shall be required to sign a declaration and deliver it with his application that he becomes a candidate and will accept the appointment if he should be appointed on the following understanding :—(*a*) That he will personally discharge the duties of his office subject to section 35 of the Metropolitan Building Act, 1885. (*b*) That he will give his whole time to the duties of his office. (*c*) That he will not, during his continuance of office (except in the discharge of the duties thereof), carry on business as an architect, surveyor, or builder, or directly or indirectly, as a partner or otherwise, be interested in such business. (*d*) That he will furnish the Council with information of those cases in his district in which the orders of the Council or the requirements of the Metropolitan Local Management Acts with regard to the width of streets or to any building, structure, or erection, or projection therein beyond the general line of buildings, are not complied with. (*e*) That he will make no claim for compensation in case a diminution of his income shall at any time hereafter arise. (*f*) That he will keep his district office open from Monday to Friday (both inclusive) between the hours of 9.30 a.m. and 5 p.m., and on Saturday from 9.30 a.m. until 2 p.m., and give his personal attendance there daily from 9.30 a.m. to 11 a.m., and (except Saturday) from 4 to 5 p.m. (*g*) That he will retire, if required to do so, on attaining the age of 65, or at any date subsequent to his attaining that age.

"3. That the aforesaid declaration of the appointed candidate shall, on his appointment, be entered on the Council's minutes.

"4. That the districts be rearranged by the Building Act Committee as opportunities may occur, so that the average of the fees received may in no case amount to less than £500 per annum.

"The Council reserved to itself the exercise of its power of dismissal, if the district surveyor so appointed should not act consistently with the understanding above set forth in any of the matters referred to therein, or for other sufficient reason."

Mr. Hutton, the chairman of the committee, moved the adoption of the report.

Colonel R. W. Edis, F.S.A., moved the following amendment :—"That, during the continuance in office, he be prohibited from carrying on the business of an architect, surveyor, or builder, or be concerned, directly or indirectly, as a partner or otherwise, in a business within his own district." Mr. John Marsland seconded the amendment, which, after some discussion, was negatived, and the recommendations of the committee were approved.

After a long debate in the French Senate on Tuesday, the Bill for the deviation of the Vigne and the Verneuil for the water supply of Paris was passed.

The late Sir Edward Baines has left to the Yorkshire College at Leeds a number of engravings and portraits, and to the School of Art in connection with the Leeds Mechanics' Institute a number of works of art including "The Italian Market-place," by Peter van Bredael; two views of Rome; the "Garden Temple," by Frederick Moucheron, and "Iphigenia," by Houbraken; engravings of works by Leonardo da Vinci, Raphael, Correggio, Guido, Paul Potter, Landseer, Holman Hunt, &c.; and portraits of Lord Brougham, the Earl of Carlisle, and Sir H. Havelock.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Dundee Institute of Architecture and Art.—The annual meeting of this institute was held on Thursday, the 26th ult. The report congratulated the members on continued prosperity, and stated that the roll for this year contains the names of seven honorary members, 49 members, and 152 associates—a net increase of three—while the balance in hand, after meeting all outlays, is £60 5s., against £49 1s. 9½d. last year. The interest in the excursions continued undiminished, and the lectures had been more numerously attended than on previous sessions, a livelier interest being taken in the discussions.

Excursion to Yorkshire Dales and Abbeys.—The North Staffordshire Naturalists' Field Club and Archæological Society have this year made Ben Rhydding Hydropathic, Ilkley, the head-quarters of their long summer outing. Bolton Abbey, the Strid, and Barden Tower were visited on Thursday in last week, under the leadership of Mr. T. S. Wilkins. On Friday the Clapham and Ingleton district, including the Caves, was explored; and on Saturday a visit took place to Malham Cove and Gordale Scar. Sunday was devoted to Ilkley and the neighbourhood of Ben Rhydding; and on Monday, after visiting Fountains and Kirkstall Abbeys, with Ripon Cathedral, the party returned home.

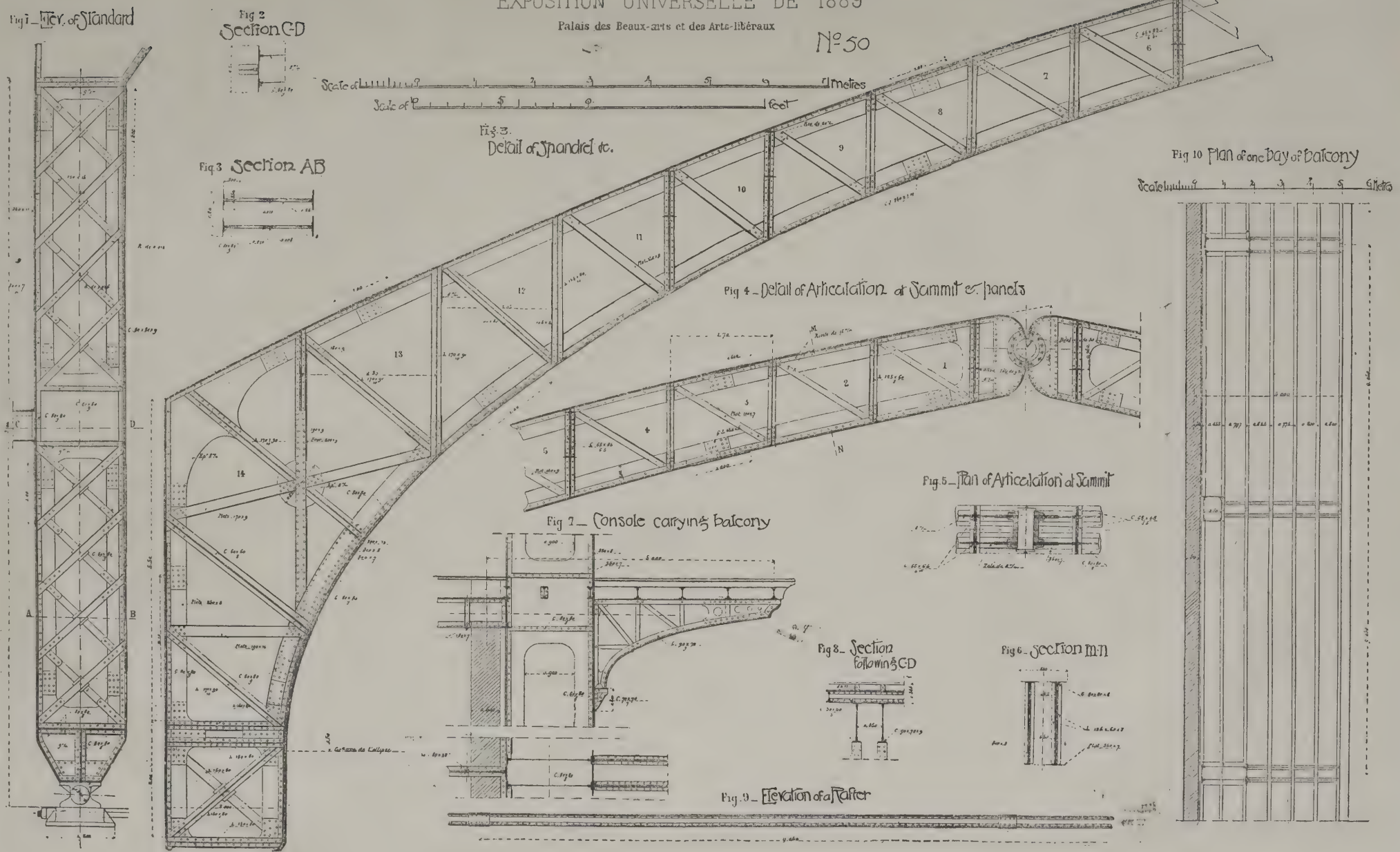
The new tower and spire of St. Mary's parish church, Stoke Newington, were dedicated on Saturday afternoon by the Bishop of London.

Memorial stones were laid last week at Carperby, near Aysgarth, of a new Wesleyan chapel. It will be Gothic in style, built of pitch-faced ashlar, with freestone dressings, and the internal woodwork is of pitch-pine. Mr. T. F. King, of Edgeley, is the architect, and the contractors are Messrs. Dougill, of Aysgarth, and Mr. Coates, of Merrick.

EXPOSITION UNIVERSELLE DE 1889

Palais des Beaux-arts et des Arts-libéraux

N° 50



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Our Illustrations.

SHEFFIELD MUNICIPAL BUILDINGS: THE FINAL COMPETITION DESIGNS.

LAST week we gave illustrations of the chosen design by Mr. Mountford; to-day we illustrate two of the other five. Mr. F. H. Tulloch, in his report to the Council, which we quote in brief, says:—"The principal entrance in the centre facing Pinstone-street leads to a spacious entrance-hall, from which is approached the main corridors and the grand staircase. The council-chamber is placed on the principal floor in the centre of the site, and is quite isolated from all noise arising in the surrounding streets. It is approached by the grand staircase, and also by the north corridor; it has a commodious anteroom, and the cloak-rooms are conveniently adjacent thereto. A gallery for the public is approached by a staircase leading from Surrey-street. The reporters have space allotted them on the floor of the council-chamber. A small retiring-room for the use of the mayor is provided. The reception-rooms are placed facing Pinstone street, and being of large dimensions, entailing a corresponding magnitude in height, give an opportunity of dealing in a broad manner with the architecture of the main façade. These rooms are approached by the grand staircase. The cloakrooms are placed in a mezzanine floor, and are conveniently arranged for the accommodation of guests before entering the reception rooms. A serving-room is provided at the north end of dining-hall, which is in direct communication with the kitchens, &c., on the second floor. One large committee-room and two sub-committee rooms are facing Surrey-street, and the remaining two large committee rooms and sub-committee room are placed facing Cheney-row, all on the first floor. The whole of the reception-rooms, the mayor's parlour, council-chamber, grand staircase, and committee rooms, with the exception of those facing Cheney-row, can be cut off from the departmental offices by screen doors across the corridors. The town clerk's offices are planned to occupy the end block facing Norfolk-street and a small portion of Cheney-row on the first floor. The borough surveyor's offices are placed to the left of the principal entrance facing Pinstone-street and part of Surrey-street, on the ground floor. The borough accountant's offices are planned to occupy the building in the centre of the site on the ground floor and basement. The offices of the health department occupy the rooms on the right of the principal entrance facing Pinstone-street. The sewerage and rivers offices are placed to occupy the Norfolk-street front on the second floor. The weights and measures offices are placed in the basement. The offices of the waterworks department occupy the whole of the block facing Norfolk-street, and a portion of the Surrey-street and Cheney-row fronts on the ground floor. There is provided an isolated block of buildings, with sufficient lavatory and w.c. accommodation for the use of the several departments on each floor. The rooms for caretaker's residence are placed on the second floor, facing the Surrey-street side. The kitchens, &c., are placed in close proximity to the dining-hall on the second floor. having a waiters' staircase from scullery to serving-room and a double service lift. The public lavatories are so planned as to be quite separate from one another. There is provision made in the boiler-room in basement for Lancashire steam boilers, and laid on from the same a steam main traversing the course of the general corridor. This main carries branch pipes to the positions occupied by coils on the various floors overhead, with vertical services having connections on each floor with "radiators." In the council chamber, reception rooms, and the grand staircase, it is proposed to have steam-heating battery chambers under the floor. The removal of the vitiated air from the various rooms would be effected by means of extraction ducts carried up in the walls, and provided in each room with a self-acting valve to prevent back draught. It is proposed to construct the whole of the front elevation and the return elevations of the main building would be faced with stone from the Warwick Quarries, Huddersfield, or from the Bolton Wood Quarries, near Bradford. The large courtyard would be faced with pressed facing bricks, the smaller courtyards or areas would be faced with white glazed bricks. The roofs would be constructed of wood and iron and covered with Westmoreland green slates. The floors of the reception rooms, committee rooms, and council chamber would have solid hard wood parquetry laid on concrete with proper bed; the corridors generally would be paved with marble and other mosaics. The grand staircase should be ornamented generally with marble linings, balusters, rails, &c. The joiners' work generally would be of wainscot, the principal rooms having panelled dadoes, &c., as shown on sections. Estimate:—

Main building amounts to 2,054,153c.ft. at 8½d. per foot	£70,612 0 0
Tower amounts to 44,904c.ft. at 1s. per foot.	2,244 0 0
Foundation below 262·0 level in Norfolk-st.	5,000 0 0
	77,856 0 0

Mr. Henry T. Hare, in describing his design, says in his report: "Although the disposition of the various apartments is similar to that shown in the sketch plans, considerable alteration in detail has been made, partly necessitated by the supplementary instructions, and partly the result of further consideration. All the suggestions made in the final instructions have been carried out." The walls are proposed to be built of brick, faced with Huddersfield stone; the floors and roofs to be constructed on Lindsay's system, with trussed steel joists and pumice concrete, the roofs being covered externally with green Westmoreland slates. The council chamber walls to be panelled in dark oak to a height of 12ft. from the floor, and above faced with Ancaster stone; all fittings in dark oak; floor to be in parquetry. The entrance hall and staircase are intended to have the walls faced with Ancaster stone, polished Hopton Wood, with marbles in dadoes and panels; marble and Hopton Wood stone would also be used in the staircase for balustrades, &c.; floor to be in marble mosaic; ceilings in enriched plaster. The report enters at considerable length into a proper system of warming and ventilation to be employed, and also an adequate scheme of drainage and sanitary accommodation. Cost:—

Cubic contents—	
2,012,000c.ft. at 8½d.	£71,250
Foundations	5,000
Upper part of tower—	
60,000c.ft. at 1s. 3d.	3,700
	£79,950

The illustrations of designs in this competition will be continued next week.

CONTEMPORARY BRITISH ARCHITECTS.

(SEE description on p. 29.)

THE GRISSELL MEDAL DESIGN FOR A TIMBER SPIRE.

THE accompanying illustration represents the Prize design for a timber spire, prepared in accordance with the conditions issued by the R.I.B.A. Council last year, by Mr. Walter Percival, of Longton, Staffs, who forwards us this description from a fully-detailed report which was sent with reference to the drawings:—The wind pressure, taken at 56lb. per square foot of perpendicular surface, on being resolved to the different exposed surfaces of spire, we have 437½sq.ft. at 54½lb., 315sq.ft. at 27¼lb., 109ft. 4in. at 36·160lb., 136sq.ft. at 18·080lb., 435sq.ft. at 56lb., 609sq.ft. at 28lb., 170sq.ft. at 1½lb., giving a total pressure of 89,191¼lb. acting in a horizontal direction, and tending to slide spire on its bearings. The materials intended to be used are Riga fir for interior work; dark oak of English growth for the exterior woodwork, finished in clear oil; panelling to be in Portland cement, with foliated work finished alto-relievo, and set natural colour, with a tinted background; 26oz. copper covering. The vertical load on each hip is something like 9,400lb., including a vertical pressure caused by wind, which at 56lb. to a perpendicular surface gives ·958lb. per foot as the vertical component in this instance. The total weight of spire is deduced from the following:—

Woodwork ...	304,624·620lb.
Ironwork	3,037·580
Cement	15,916·500
Lead	1,527·500
Copper	1,454·000
Total in lbs.	326,560·200

By the parallelogram of forces it will be found that the resultant force of the whole of spire falls at about the point of maximum deviation, this tending to show that only in furious gales and other spasmodic applications of Nature's forces have we anything like a great tensile stress on the windward side of spire, which has been amply provided for. Entasis has not been considered, for the following reasons. Whenever it is adopted, it is principally for compliance with certain optical delusions. Truthfully, I acknowledge, and agree with several writers, that when an arris is diminishing from the base upwards, it ought never to be a perfectly straight line, but should always have a slight outward curvature, so as to prevent any appearance of hollowness in outline. But since entasis may be worked by several methods, it is an almost impossible thing to get that grace of contour or that subtle grace of line and curve which so often holds in suspense the æsthetical admirer, without first considering the situation and height of the spire above ground, the appearance of having bulged by too great curvature being often brought into painful obtrusiveness when seen in perspective. Secondly, several writers have argued that the condition of the spire is greatly improved by the outline producing a form of equal strength in all its parts; but by simple rules the theoretical principle of entasis in construction is comparatively of little importance, and merely to give justice to the remainder, it would be absurd to introduce unnecessary difficulties in the practical or actual construction of the work.—W. P.

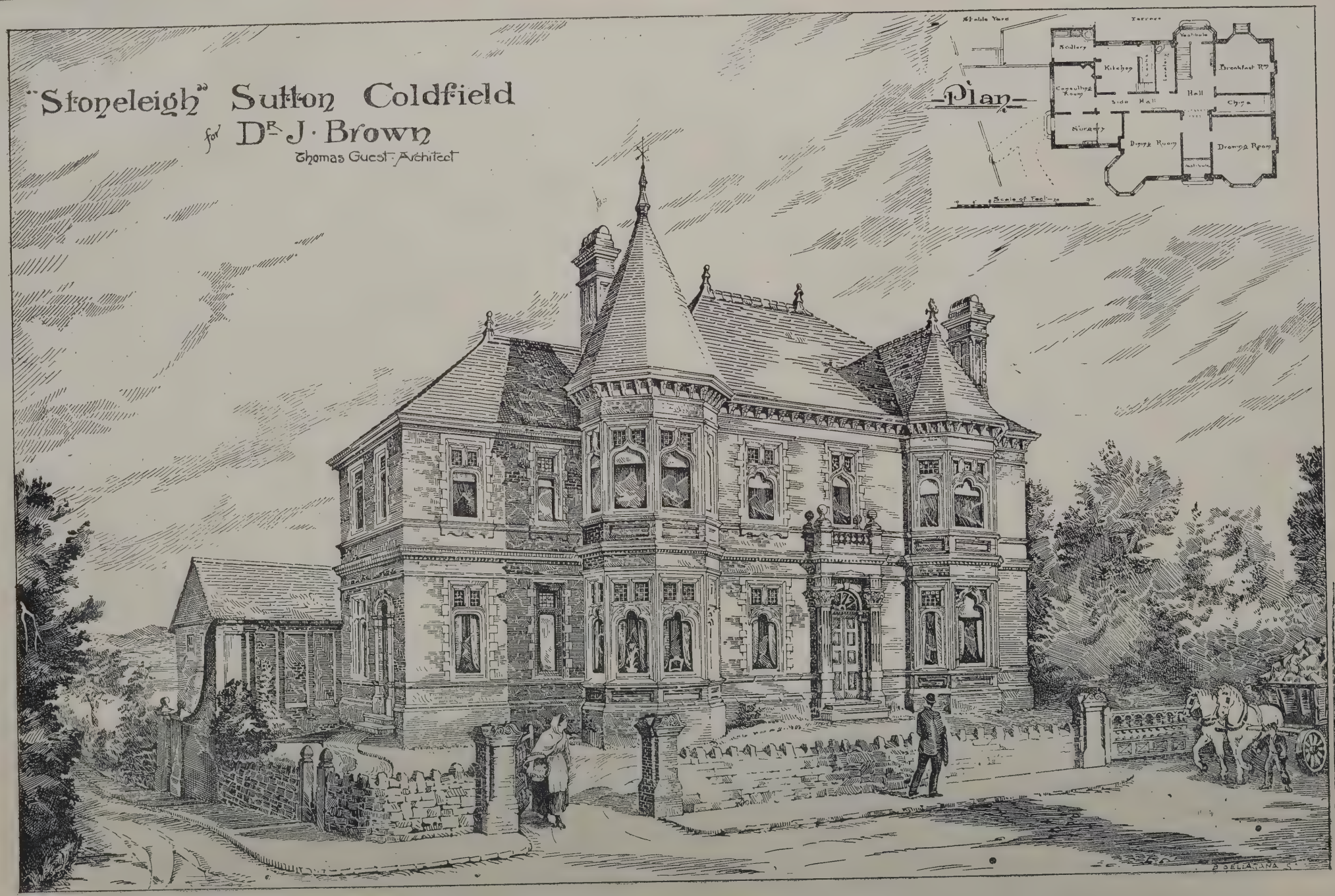
[We illustrated the extra medal design from the same competition by Mr. Pennington in the BUILDING NEWS for April 11th, 1890.]

"STONELEIGH," SUTTON COLDFIELD.

THIS residence, recently completed, situated in one of the most picturesque spots in the Midlands, is constructed of red brick with Bath-stone dressings. The roofs are covered with Handsworth Wood red pressed tiles, and the walls built hollow. The whole of the joiners' work is executed in best selected pitch-pine. The site, which falls with rather a sharp gradient from the main road, is taken advantage of at the back, and a charming terrace provided, from which the lawn is reached by a flight of stone steps. Mr. Thomas Guest, Cobden Buildings, Corporation-street, Birmingham, is the architect, and Mr. J. Simons, also of Birmingham, the builder.

CHASED DRINKING-POT.

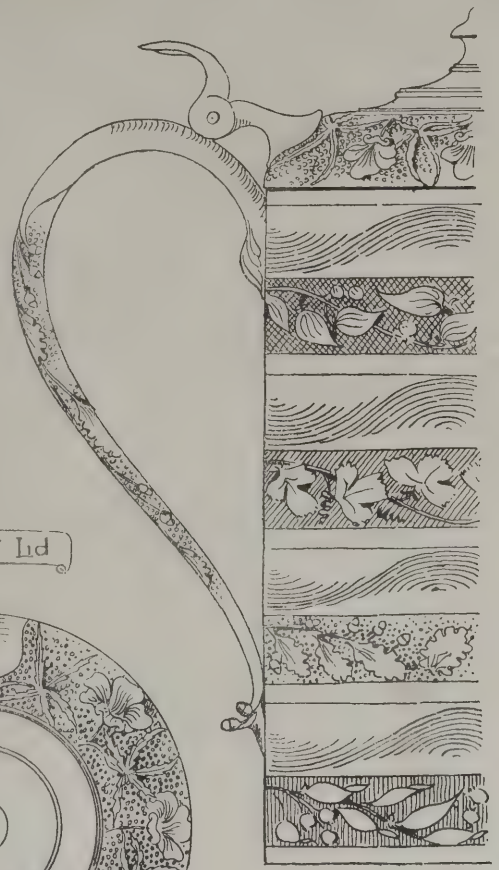
IN the design for the above, which we illustrate herewith, there are two points to which we would call attention. The first is the excellence of the design, and the second is the youthfulness of the designer. With regard to the first, we cannot but commend the variety and elegance of the ornamentation, which is rich without being overdone, and we are, moreover, struck with, what seems to us, its originality and freedom from modern bias. With regard to the second point, we would say that if Walter Taylor is alone answerable for the design, then he reflects great credit on The Guild and School of Handicraft, of which institution he is a pupil; and we shall be surprised if we do not hear more of him. The original drawing was shown at the recent exhibition of the Armourers and Braziers' Company at their hall in Coleman-street.


"Stoneleigh" Sutton Coldfield
for Dr. J. Brown
Thomas Guest: Architect
Plan
Stable Yard
Terrace
Scullery
Kitchen
Breakfast Rm
Conselling Room
Hall
Side Hall
Office
Nursery
Dining Room
Drawing Room
Scale of Feet
SELLA & ANA

DESIGN FOR A CHASED DRINK -ING POT IN PEWTER

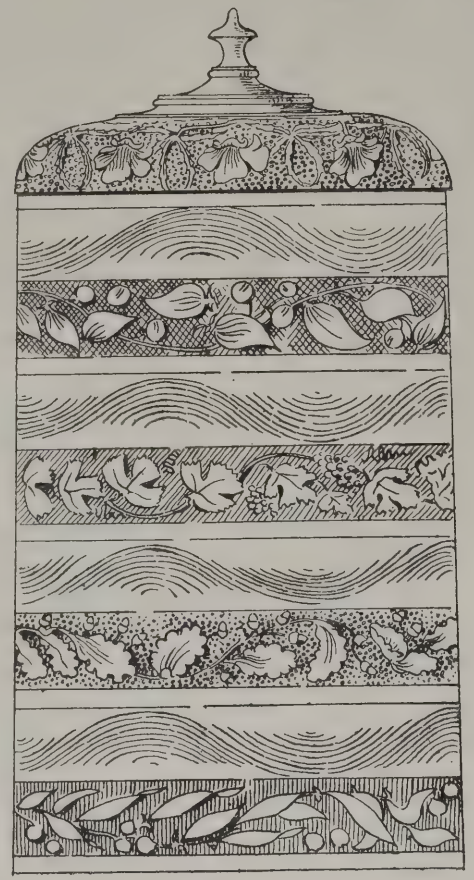
Designed by Walter Taylor
pupil of
The Guild & School of Handicraft
May 1890 (age 14)

Side view of Handle

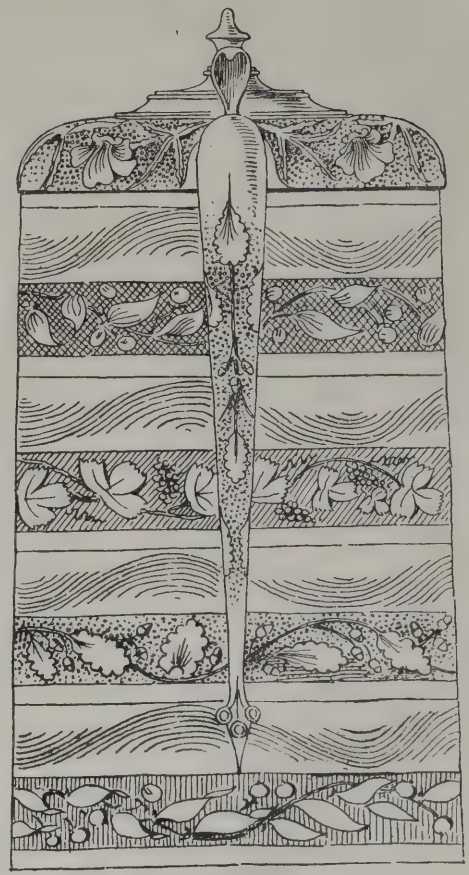


Top view of Lid





Front view of Pot



Front view of Handle

B. DELLAGANA S.

E. Chancellor del.

WAYSIDE NOTES.

SIR ARTHUR BLOMFIELD has given some assurance that the restoration works to be carried out at the old church at Burnham Thorpe will not be of a kind likely to interfere with parts and features of the fabric that existed in the time when Nelson sojourned at the rectory. In the words the architect has penned to reassure parties who feared that the building would be dealt with in such a manner as to obliterate features hallowed by associations with the great commander, we find ample reason to believe that the restoration will be conducted in a most conservative spirit:—"It is not proposed to alter a single feature which exists, as he (Nelson) must have seen it, nor will anything be removed that can in any way be associated with his memory. The top of the tower and the south aisle will be rebuilt. All arches will be opened out, the modern deal pews and roofs will give place to oak of a suitable character, and the only old roof remaining—viz., that over the south aisle, will be carefully preserved and repaired." This restoration, it will be seen, is conceived in a proper spirit. Nelson's father, in 1793, completed various crude alterations to the building, pulling down the south aisle and rebuilding the upper story of the tower, besides blocking up the arch into the tower, and erecting a gallery over. It seems plain, then, that no one of an architectural turn of mind will object to the proposed restoration, although, as it is difficult to please everybody, there may be some worthy individuals who, on the wolf-and-lamb principle, will urge that, though these alterations were effected subsequent to the date when Nelson left the town for good, they were carried out by his father, and that work associated with Nelson *père* has interest second only to that associated with the son.

I have not done a vast deal in the patent way, but really think I shall go in largely for it at once, and get provisional protection for all sorts of arrangements for cathedrals and churches, town halls, free libraries, public and private houses, &c., so that whenever it happens that a competitor has been successful with a plan after any of my ideas, I may be in a position to demand a royalty or enforce an alteration in the plan. I only hope that I am not destroying the golden future I see before me by thus letting the profession into the secret, though I quite think there may be a rush for the Patent Office and a scramble for the stamping-room if it comes to pass that an architect is able to patent an arrangement of rooms, &c., so as to prevent its adoption for the town hall of a large civic corporation. I foresee the rush: Chancery-lane will be impassable for days, and the official quarters in Southampton Buildings will be besieged by a mass of struggling architects anxious to effect preliminary steps for obtaining letters patent for whole folios of plans. So, perhaps on second thoughts, I won't do any patenting myself; but just stick to good old types of plan that can't be patented on account of long prior use, and will manage with six-roomed cottages with back additions, and ten-roomed houses with the old original fore-and-aft staircase; and when that long-expected cathedral job comes along I will content myself with the plan and arrangement of St. Paul's on the one hand, or Salisbury on the other. I shall be able to jog along in this way.

Seriously, I should like to see Messrs. Flockton and Gibbs try their case *in re* the accepted plan for the Sheffield Municipal buildings. It would be an event of more than passing interest in an intolerably dull architectural world. A successful issue would be very doubtful. If the patentees' claim is valid, no one would desire to see justice miscarry, although at the present time all architects pooh-pooh the claim, and very naturally. It is, however, just possible that the nature and extent of the claim may not be understood by the profession generally, and it may be that the claim for infringement only covers some small portion of the plan that Mr. Mountford could easily modify. In this event, no one benefits by the patent, which would only act on the dog-in-the-manger principle. Anyhow, this is a very interesting point to the profession, and if proceedings are taken in the matter, they will be assiduously followed by every architect. Messrs. Flockton and Gibbs would be doing us all a good turn in trying their case, as it might for all time show the futility of preventing the adoption of certain plans by an architect in his everyday practice. If such proved the result, however, the claimants know what they would have to pay, and, knowing this, they will perhaps wisely hesitate to try and enforce their claim.

I have thought a good deal about the recent deputations to the Institute Council, and not to much moment; for it would appear to me that the primary cause of the evils complained of by the spokesman of the deputations are referable not so much to the sub letting system, but rather to the tendencies of the present time towards cheapening cost of production and cutting down profits to a minimum. None the less are they to be fought against and overcome where possible. If the Institute can do anything to lessen the "sweating" that takes place in the building trades, as well as in other industries, as humbly implored by the operatives who recently waited upon the members of its council, it will be doing good work indeed. How it is to be done is not at once apparent. The "Heads of Conditions" sanctioned by the Institute contain the clause against the sub-letting of contracts, and beyond recommending its insertion into agreements between builder and client, it cannot do much to prevent the sub-letting that in spite of all is the universal practice among a class of contractors. And, as a matter of fact, the subletting clause, though everywhere adopted by architects, is more honoured in the breach than in the observance. It is mechanically inserted, and as mechanically ignored by the contractor—ignored, that is to say, in the spirit, though observed in the word. To prevent every kind of sub-letting on the part of the contractor would require an architect with supernatural perception. It is, indeed, much to be feared that, under the contract system, a certain amount of sub-contracting must take place, though, at the same time, vigilance and firmness on the part of the architect may do much to prevent it.

The burden of the tale of the operatives that waited upon the Institute is no new thing. It has been written upon and spoken upon for years. The only difference is that when architects deal with the question it is as touching the outlook and prospects of English architecture, whereas when the craftsman takes up the cry it is very naturally only with reference to his own position and advancement. To us the meretricious worker is objectionable from an architectural point of view; being but human, we are prone to think first of our own interests, and so when he himself regards the way that things are tending it is with reference to his interests as a worker and wage-earner. The so-called "first law of nature" comes into play in both cases. The artisan, however, has more claim to consideration from an impartial onlooker, for in his case it is a matter almost of life and death—at any rate, it is the difference between struggling and living comfortably. And as we have ever striven to assist the building operative, believing that his interest and that of the architect are identical, we should now gladly do all in our power to aid him in his endeavours to mitigate the evils of "sweating." My own power for good, unfortunately, is little more than any other architect. I can only draw general attention to the effort made on the part of the craftsman, and point out that what he desires for his own benefit is equally for that of the architect, and hope that those who in the past have written and lectured on the relative positions of architect, builder, and operative, will not miss the present opportunity for making further suggestions.

We have all often expressed disgust at a system of building that creates one big financier who arranges with various other parties for the execution of certain portions of a contract, and we have longed for the day when the good old master-builder shall again appear upon the scene. Now this would be as bright a day for every craftsman, artisan, and operative connected with the building trade as for ourselves, and the evils that induce us to wish for the change are precisely such as led the little band of operatives to seek a hearing of the Council of the Royal Institute of British Architects. Knowing this, perhaps the architectural profession may take a lively interest in an event that seems in danger of being completely passed over.

The Architectural Association may some day congratulate itself that it was prevented from deciding in a premature way on the merits of the proposed reorganisation. It will, at any rate, have the satisfaction of knowing that it did not commit a blunder through ill-haste. I have no wish to say that the reforms, urged in the report so conscientiously prepared by the Education Committee, would, if carried out, have constituted a blunder; but there is always ample room for regret in actions done in haste, and, I might almost say, *in a panic*, for one speaker at the last meeting of the Association actually expressed a fear that the delaying of the consideration of the reforms until next session would *afford an opportunity for other bodies to step in and do the work!* If considerations of this sort were to weigh in our every action in daily life, we should rapidly get to a state of feeblemindedness that would land us, ultimately, in a madhouse. Such haste for such reasons is unbecoming and undignified; and I maintain that, except in any cases where some degrees of self-interest may be apparent, one and all will be glad when next session comes round that they have had a few quiet months to reflect upon the proposed radical alterations in the constitution of the Association. Enough has been said and written to turn the thoughts of members into such channels as may be natural to them, and when the subject is again brought forward they will be in a position to judge the merits of any schemes that may be matured for their consideration. For my own part suffice it to say that, I think well of the idea to improve the Association, and I think well of the endeavours of the Education Committee; but it has become evident to me that, despite the assertions to the contrary, there is nothing like unanimity among the members, and that a hasty decision on so vital a point as the total reorganisation of the educating machinery might easily form the begining of the end with regard to the popularity of the Architectural Association. GOTH.

CHIPS.

Camden Place and Park, Chislehurst, the late residence of the Empress Eugénie, has been purchased by Mr. W. Willett, the well-known builder, of London and Brighton, who proposes to develop it as a building estate.

The London County Council has bowed to the inevitable, and has abandoned the clumsily drafted Strand Improvement Bill, in consequence of the committee of the House of Commons having rejected the "betterment" clause.

The death is announced, at the age of 70 years, of Antoine de Solomé, the crayonist. Born at Munich, he spent the greater part of his life in England, and executed in this country over two thousand portraits.

The Amendment Bill to the Metropolis Management Amendment Act has this week safely passed through all stages in the House of Commons.

The memorial clock subscribed for by the inhabitants of Oswestry in memory of the late Mr. Askew Roberts, the well-known Welsh antiquarian and author of "The Gossiping Guide to Wales," was handed over to the Mayor of Oswestry, in trust for the burgesses, on Tuesday. The clock is a treble-dial one, supplied by Messrs. Joyce, of Whitchurch.

Dulwich Park has been opened to the public by the Earl of Rosebery. The land on which the park has been formed, extending to 72 acres, was presented to the late Metropolitan Board of Works by the Governors of Dulwich College, on condition that the Board would lay it out as a park for the use of the public. This arrangement was confirmed by Parliament, and the park has been laid out in accordance with designs by Mr. J. J. Sexby, at a cost of about £33,000. In addition to the usual paths it contains a lake, carriage road, a horse ride, and two lodges.

In the omnibus Bill of the Metropolitan Railway Company, which has just passed through both Houses, the Company are empowered to construct subways at King's Cross and Euston, and also a railway over six miles in length from the Aylesbury and Buckingham Railway to Quainton.

A special meeting of the Taunton town council was held on Monday, when it was decided to ask the Local Government Board to sanction a loan of £9,500 for the purpose of the waterworks, instead of £9,000, as previously applied for. Mr. F. N. Taylor was appointed engineer to carry out the extension of the works.

Thomas Harding, a builder, of Kentish Town, who shot and killed Florence Verney in the Victory public-house on May 21, will be executed on Tuesday next. He is thirty years of age.

GRESHAM LIFE ASSURANCE SOCIETY: NEW BRANCH OFFICE, CORK.

THIS office has just been finished; it occupies one of the best sites in the city. It is built with Youghal bricks, with facings of red bricks; cornices, barge, and dressings of local limestone, which is a charming colour, pale blue-grey, almost white; red Aberdeen granite columns; oak parquet floors laid by Turpin and Co., Queen's-road, Bayswater. The building has been erected by Mr. S. Hill, contractor, from the design and under the superintendence of Mr. Robert Walker, P.S.A., architect, of 17, South Mall, Cork.

CONTEMPORARY BRITISH ARCHITECTS.

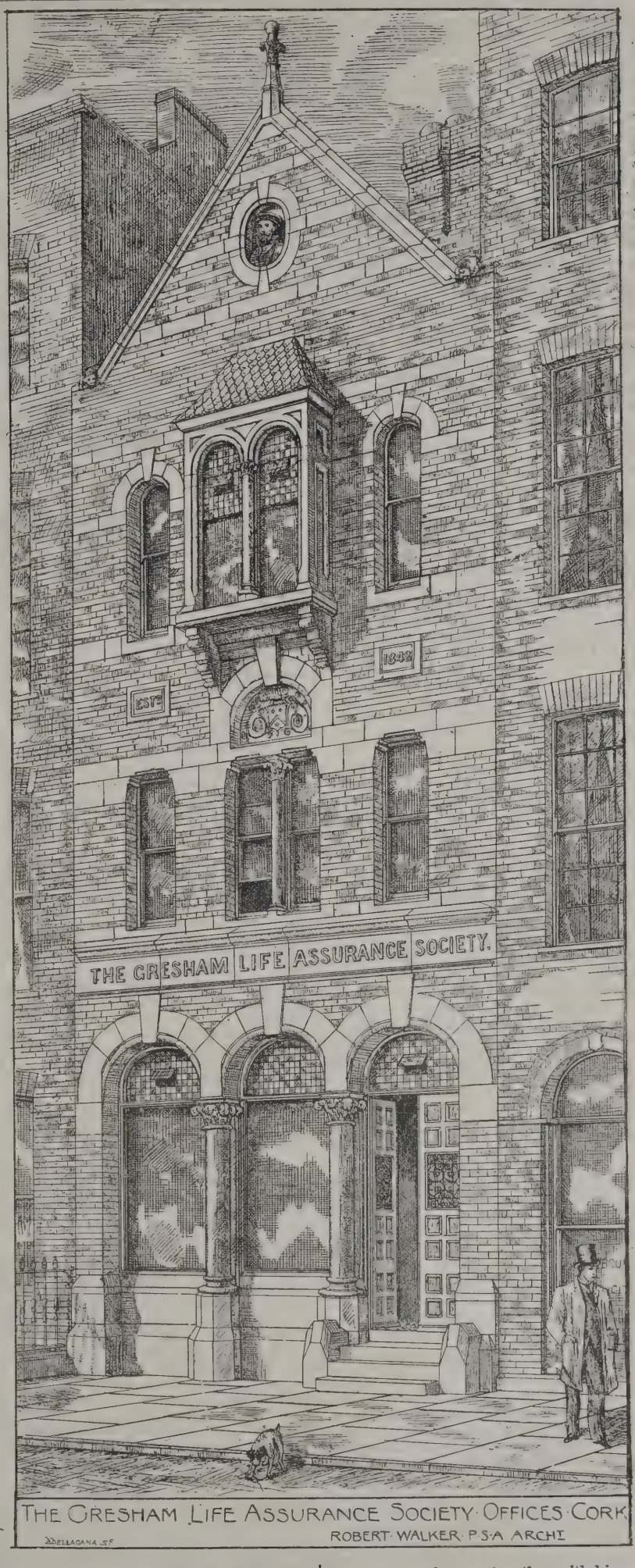
[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

WE have now given fourteen sheets in this series, and the plate to-day is our fifteenth double-page group of living British architects. As this is the first number of our new half-yearly volume, we give below* a reference to the dates on which these former sheets of architects' portraits were published.

First on our accompanying plate is the photograph of Mr. Arthur Edmund Street, M.A., who was born in 1855, and was educated at Eton and Magdalen College, Oxford. He was a pupil to his father, the late G. E. Street, R.A., and has been in practice since the death of the latter in 1881. He has completed from his father's designs, or on his own account, a large amount of work in churches, schools, parsonage houses, &c., the most important work, perhaps, being the Church for the Americans in Paris, the designs for which the late Mr. Street had prepared in small-scale drawings. The building of the cathedral church, Halifax, Nova Scotia, is in Mr. Street's hands. He finished the Law Courts in conjunction with Sir Arthur Blomfield, A.R.A., and he published the life of his father a few years ago. Mr. Street frequently exhibits at the Royal Academy, and this year has two frames of his drawings at Burlington House. We published one in our pages for June 13th last, giving views of new schools, St. James's-the-Less, Westminster; the Guest House, East Grinstead, and the Thring Memorial Chapel, Uppingham. The other gives an interior of Halifax Cathedral before mentioned.

Professor Gerald Baldwin Brown, M.A., Oxon, was born on Oct. 31, 1849. He is the only son of the late Rev. J. Baldwin Brown, Independent Minister, of Clayland Chapel, Clapham-road, London, and was educated at Uppingham School under the late Rev. E. Thring. He took an open scholarship at Oriel College, Oxford, in 1869, and followed the regular Oxford course and graduated in 1873, taking a first class in Literæ Humaniories. Professor Brown gained the Chancellor's Prize in that same year for an English essay on "The Short Periods at which Art has remained at its Zenith in the various Countries." He was elected Fellow of Brasenose College, Oxford, in 1873, and resided for three years at Oxford, after which time he studied for the profession of a painter in London and Munich. In 1880 he was appointed to the Watson-Gordon Professorship of Fine Art in the University of Edinburgh, as the first occupant of the chair, which had been founded in honour of Sir John Watson-Gordon, R.A., P.R.S.A., by some members of his family. The work incidental to this appointment involves lectures on all branches of theory and history of architecture and the other arts of form. The lectures do not as yet qualify for graduation; but it is expected that the Royal Commission now sitting on the Scottish Universities will make arrangements by which attendance at the Watson-Gordon classes will count towards a University degree. The number of lectures given in a session varies in different years from 40 to 50 to 100. A large collection of examples is used to illustrate the themes dealt with. In 1886 Professor Baldwin Brown published "From Schola to Cathedral," a study of Early Christian architecture and its relation to the life of the Church (Edinburgh: David Douglas). He is also the author of several papers, &c., in the publications of the R.I.B.A., and elsewhere. He is an Hon. Associate of the R.I.B.A., and is a Fellow of the Scottish Society of Antiquaries, &c. His photograph, now reproduced, is from the studio of Mr. J. Moffat, of Edinburgh.

Mr. J. Tavenor Perry, of the firm of Messrs. Perry and Reed, was, together with his partner, a pupil of Professor T. Hayter Lewis, and on the retirement of the Professor continued to carry on



THE GRESHAM LIFE ASSURANCE SOCIETY OFFICES CORK.
ROBERT WALKER P.S.A. ARCHT.

* Jan. 3rd, 17th, 31st; Feb. 7th, 14th, 28th; March 7th, 21st; April 18th; May 16th, 23rd; June 6th and 20th, 1890.

his practice in the same offices. Among the principal works they have carried out since that period may be mentioned the following:—The scene-painting rooms for the Alhambra, the structural alterations of the dome and entire redecoration of the theatre, and, after its destruction by fire, its rebuilding on novel principles—the first serious attempt ever made to construct a building of this nature wholly of fire-resisting material; the north wing of University College, London, and the chemical laboratories in the rear, in continuation of the works already begun by Professor Lewis; the schools and vestry of the Chapel Royal, Savoy, for her Majesty the Queen; the drapery establishment at Chelsea for Mr. Peter Jones, costing about £70,000; the three blocks of flats in the centre of Kensington Court, for Mr. F. Baynes; the "Clapton Hall," for Mr. John Morley; works in the Chapel of the Augustinians, Bruges, Belgium; the residential flats and offices in the Wilhelmstrasse, Berlin, for the Union Assurance Society; the school-house, &c., for the headmaster of the Cathedral Grammar School, erected at the cost of the Dean and Chapter of Rochester. The Dean and Chapter of Worcester also employed them to report on the Refectory; in consequence of which, the firm prepared a scheme for certain restorations and additions thereto for the school. As surveyors to the Union Assurance Office they have frequently to superintend extensive reinstatements in London and the provinces. They are now engaged in rebuilding the Salisbury Estate, Strand, with a hotel and annexes, at a total estimated cost of £400,000. Mr. Tavenor Perry was the first appointed "Pugin Student," and afterwards published an account of his work in Durham; and was an Institute Silver Medallist and a "Sir Francis Scott" prizeman. Jointly with Mr. E. J. Tarver he originated, and for the first few years edited, the "Architectural Association Sketch Book." He also published the history of the two priories of St. Martin, Dover, he having been engaged on the restoration of the refectory of St. Martin. Mr. Perry's portrait was specially taken for our series by Messrs. Elliott and Fry.

Messrs. H. and D. Barclay are architects in practice in Glasgow. The senior partner, Hugh Barclay, entered the profession 45 years ago; his brother, David Barclay, entered with him as apprentice in 1861, and along with whom at the same time as a pupil was the late Mr. James Sellars, of Exhibition fame. Ten years later David became a partner of the firm, and they have been engaged largely in general business and in churches and schools. The Glasgow Academy, built twelve years ago, besides being of note architecturally, was regarded as a successful engineering feat in having been built on a new principle, the foundation being upon an embankment 30ft. in depth of forced earth alongside the river Kelvin. In 1879 they were successful in the competition for the Greenock Municipal Buildings, among 85 competitors, Mr. Chas. Barry being the adjudicator; the work has been completed at a cost of £120,000, and is considered in the architectural profession a great success. Mr. David Barclay has had the honour of being elected on two occasions to be honorary president of the Glasgow Architectural Association. He has been a member of the Glasgow Institute of Architects since its foundation, and was a member of Council for a number of years, and is a past vice-president of that body. He was offered the position of president, but declined the honour, contenting himself with the fact being recorded on the minutes. Mr. Hugh Barclay's portrait is by Mr. W. H. Gilchrist, Glasgow; and Mr. David Barclay's photograph was taken by Messrs. Brinkley and Stevenson, of the same city.

Mr. James Fowler, F.R.I.B.A., J.P., of Louth, was formerly diocesan surveyor for Lincolnshire. He was elected a Fellow of the R.I.B.A. in 1855, and has been four years on the Council. He has erected and restored many churches and parsonages in Lincolnshire, Notts, Yorkshire, Suffolk, &c.; his principal domestic works have been the restoration or almost rebuilding of Browne's Hospital, Stamford; the restoration and enlargement of Dingley Hall, Northants, for Mr. H. H. Hungerford; Morton Hall, Notts, for Mr. George W. Mason; Langton Hall, Lincolnshire, for Mr. B. R. Langton; Dalby Hall, Lincolnshire, for Colonel Preston, &c.; and amongst his more important churches we note St. Mary's, Newington; the Holy Trinity, Wanstead (see BUILDING NEWS for illustrations of this church, May 23, 1890); the Lonsdale Memorial Church (St. Mary's), Lichfield; the churches of St. Swithin and St. Andrew, in the City of Lincoln—the former has a fine spire; the restoration in part of the old palace at Lincoln for Bishop Wordsworth; the restoration of Heckington and Bolingbroke churches, recently illustrated in our pages; the restoration, &c., of St. James's Church, Louth; with the erection of the new church of St. Michael, in the same town; the Grammar School, Savings Bank, and other private works; the De Arton School, at Market Rasen, &c. Mr. Fowler has been previously three times Mayor of Louth, and at the present time is Warden of that borough, the office being equivalent to that of mayor, or head of the town. From the time of Edward VI. until the passing of the Reform Act, when a mayor and corporation was adopted, the term "warden" was used. The warden and assistants are the governors of the Grammar School and manage all its affairs. Mr. Fowler has taken an active interest in the annual excursions of the Architectural Association, and on several occasions has conducted the party over some of the more important buildings. The portrait given was taken for this collection a short time since by Mr. Thomas Fall, of Baker-street, W.

CHIPS.

A memorial tablet, bearing a medallion portrait of the late Right Hon. W. B. Dalley, has been executed by Sir Edgar Boehm, and will be unveiled in the crypt of St. Paul's Cathedral by the Earl of Rosebery on Thursday week, the 17th instant, at eleven o'clock. Mr. Dalley was Chief Secretary in the New South Wales Ministry at the time of the Soudan War.

The schools attached to Wycliffe Chapel, Totterdown, Bristol, are about to be rebuilt from plans by Messrs. Foster and La Trobe, of that city, at a cost of about £2,000. The new building will be erected in the rear of the present chapel. It will be Gothic in style, in harmony with the chapel, and will be constructed of red bricks, with stone facings. Accommodation will be provided for 800 children.

A new church, which has cost £4,000, and is the gift of Sir Pryce Pryce-Jones, the Conservative candidate for Montgomery Boroughs, in honour of his Jubilee knighthood, has been opened by the Bishop of St. Asaph, at Newtown. Mr. Aston Webb was the architect.

The Court of Common Council has abolished the office of keeper of the Monument, and has authorised the City Lands Committee to make arrrangements for the efficient control and management of the structure. It will be a surprise to many citizens to read that the average annual number of visitors to the Monument is 45,730, and the fees received amount to no less than £570.

On Tuesday last the Princess Louise opened a large new institute erected in the Buckingham Palace-road, S.W., from the designs of Mr. E. F. C. Clarke, of Victoria-street, at a cost of £13,000 to £14,000, for the lads and workpeople in the parish of St. Peter's, Eaton-square, Belgravia. The façade, situated next St. George's Baths, is executed in red brick, and is designed in a Renaissance style, simply treated, with entrances on either side, and a gable marking the centre of the elevation, which is enriched with pilasters, boldly dividing the arrangement of the fenestration. The Duke of Westminster granted the site at a nominal rent, but the requirements of the Grosvenor Estate restricted the treatment of the design materially. The accommodation includes a concert hall, a gymnasium, coffee and reading rooms, as well as a library, game rooms, and committee rooms.

A memorial tablet of alabaster, 9ft. in length by 4ft. in height, has been placed in Eignbrook Congregational Chapel, Hereford, in memory of the late Rev. J. Ormerod Hill, for 27 years pastor. It was designed by Messrs. Nicholson and Son, and executed by Mr. T. A. King, all of that city.

The Southampton Harbour Board decided last week to proceed with the extension of the quay, as authorised by the Acts of 1882 and 1887, at an estimated cost of £20,000. The work of preparing the plans was intrusted to Mr. James Lemon, J.P., C.E., with whom will be associated Mr. E. C. Poole, son of the surveyor to the harbour board.

Mr. T. H. Harrison, on behalf of the Local Government Board, conducted an inquiry, at the Public Offices, Wednesbury, on Friday, with reference to an application on the part of the town council for sanction to borrow £1,500 for works of paving, and £1,750 for the extension of the public offices. Mr. E. M. Scott, borough surveyor, and Mr. Kendrick, of the firm of Messrs. Wood and Kendrick, West Bromwich, architects of the Art Gallery buildings, gave evidence.

COMPETITIONS.

BATTERSEA.—For the Polytechnic Institution to be held in Battersea Park Road, the following architects have been invited to compete:—Mr. J. Belcher, F.R.I.B.A., Mr. C. A. De Boinville, Mr. H. C. Boyes, F.R.I.B.A., Mr. H. H. Bridgman, F.R.I.B.A., Mr. T. Chatfeild Clarke, F.R.I.B.A., Messrs. Henman and Harrison, A.R.I B.A., Mr. George Hubbard, Mr. J. M. MacLaren, Mr. E. W. Mountford, A.R.I.B.A., Mr. W. H. Seth-Smith, Mr. T. Osborne Smith, A.R I.B.A., Messrs. Roger Smith, Son, and Gale, Mr. Sidney R. Smith, A.R.I.B.A., Mr. E. G. Tarver, F.R.I.B.A., Mr. James Weir, F.R.I.B.A. Mr. Rowland Plumbe, F.R.I.B.A., of Fitzroy-square, the assessor, has prepared a detailed code of instructions. From the sets of designs submitted in this preliminary competition, six will be selected, the authors of which will take part in a final competition. Each of the half-dozen entering for the final competition will receive £50, and the architect placed first will be paid a premium of £400, including the sum just mentioned, which will, however, merge in his commission of £5 per cent. in the event of his being employed to carry out the building. The total cost of the building is not to exceed £40,000, and any design adjudged likely to exceed this one will be set aside.

HARROGATE. — A special meeting of the Harrogate Town Council was held on Thursday in last week, for the purpose of receiving the report of the assessor, Mr. George Corson, of Leeds, on the final Montpellier Baths plans competition. In the preliminary competition, twenty-six designs were submitted, and in the final four were selected to compete, a like number of premiums being offered. Mr. Corson presented his report, and recommended that the set of plans No. 13 be awarded the first prize, set No. 12 second, set No. 26 third, and set No. 17 fourth. In No. 13, the general arrangement was exceedingly simple and clear. The gentlemen's baths were placed in the west, and the ladies' baths on the east of the central hall, and were reached by wide, straight corridors, running east and west, with cross corridors running north and south. These open courts were introduced between the blocks to give light and ventilation. The w.c.'s in all cases abutted on external walls, and were lighted by windows in those walls, and the baths were similarly planned and lighted. The dressing rooms were lighted by windows above the level of the corridor roofs, and the various classes of baths in both departments were well distinguished and kept separate by their respective corridors. The Turkish baths were also kept separate in the south-east angle, and were entered through a vestibule in the central hall. The retiring rooms and sanitary accommodation for both sexes were very conveniently placed. The report having been unanimously adopted, the sealed envelopes were opened. The Mayor announced that the winners of the first prize, £150, were Messrs. Frank T. Baggallay and F. E. Bristowe, of Heddon-street, Regent-street, London; the second, £100, Messrs. W. Thomson and Frank T. Verity, of 11, Jermyn-street, London, and Mr. W. Phipson, engineer, of 14, St. John-street, Adelphi, London; the third, £75, Messrs. C. O. Ellison and Son, of 62, Dale-street, Liverpool; the fourth, £50, Messrs. Morley and Woodhouse, 269, Swan-arcade, Bradford. A committee of ten members was appointed to confer with Messrs. Baggallay and Bristowe, with power to call in Mr. Corson as professional adviser. The plans have been on view all this week from noon to 6 p.m., the exhibition closing to-morrow (Saturday).

The Dundee Town Council have formally acknowledged the receipt of a deed of gift of a public park to the inhabitants from Messrs. Cox Brothers, manufacturers, Lochee. The park is 25 acres in extent, and is in the Lochee district of the city. It is to be used solely for recreation purposes by the inhabitants of Dundee and Lochee in all time coming. The park cost £10,000, and the Messrs. Cox will, at an expense of £3,500, build a retaining wall and keeper's house, and give £2,500 as an endowment for the upkeep of the park.

An inquest was held on Monday at Manchester on the body of Michael Robinson, architect and surveyor, of Hollinwood House, Fallowfield, near Manchester, aged 71 years, who shot himself in his bedroon at his son's house on Friday evening. A verdict of "Suicide while insane" was returned by the jury.

Building Intelligence.

Beelsby.—The church of St. Andrew, at Beelsby, on the North Wolds of Lincolnshire, was reopened, after practically having been rebuilt, on Tuesday, the 1st inst. The work now done forms a nave, chancel, south chancel or vestry, and south porch. The aisle arcades of three arches are rebuilt in the walls, ready for use if required. The old chapel arch remains, and the west arch has been rebuilt, with a three-light window over it. The roofs are open-timbered, and unstained; the seats are varnished; the west gable is surmounted by a handsome bell gable, with spire terminal. The east window is of flowing Decorated work, and has been filled with stained glass as a memorial to a late resident. The building has been carried out by Mr. C. Baines, of Newark, and Mr. J. West, of Beelsby, under the direction of Mr. James Fowler, of Louth, architect.

Cardiff.—The Royal Hotel in St. Mary-street is about to be enlarged by the addition of a loftier block at the corner of St. Mary-street, Wood-street and Westgate-street. Mr. T. P. Jones, of Cardiff, is the architect, and the new block will be similar in style to the present one—viz., Renaissance, but will be carried out in Bath stone instead of plaster, the ground-floor frontage being of Portland stone with Aberdeen granite columns. The new block will be six stories in height, exclusive of a lofty mansard roof, containing offices, and will rise to 110ft. above the pavement level. The chief apartments on the first floor are the banqueting hall, 66ft. by 36ft. and 17ft. in height, two rooms *en suite*, each 18ft. by 30ft., a central hall 20ft. square. The builder's contract has been let to Messrs. E. Sheppard and Son, of Cardiff, for £25,000; Mr. Archibald D. Dawnay, of London-bridge House, has the contract for ironwork; and the carving is to be executed by Mr. Wormleighton, of Oxford.

Edinburgh.—A step towards the further completion of St. Mary's Cathedral, according to the designs of the late Sir Gilbert Scott, was taken on Friday, when the Edinburgh Dean of Guild Court approved of plans for the erection of a chapter-house at the north-east corner of the main building. The house will in size be about 36ft. square, and in style like the cathedral itself, Early Pointed. Light will be admitted by four windows on each of the three sides exposed. On the floor level the house will be square, but at the cornice level octagonal, while the roof, following the same form, will, at a height of over 70ft., narrow to a point, which will be surmounted by a cross. As to the interior, the roof will be elaborately groined—the moulded and carved ribs springing off decorated shafts, and having a central column of polished granite. Money for the erection of the house was left by the late Mr. Hugh J. Rollo, W.S., and the cost of the work will be about £5,000. It is expected that it will be completed in the early part of next year. The plans were prepared by Mr. John Oldrid Scott, F.S.A., son of the late Sir Gilbert Scott, and they are being carried into effect by Messrs. Morgan and Sons, contractors, Glasgow.

Fitzhugh, Southampton.—A new church, to be dedicated to St. Mark, is being built in the district of Fitzhugh, near Shirley. The contract has been placed with Messrs. Joseph Bull, Sons, and Co. (Limited) for the first section of the work at £4,921, the second section, for the fittings, being for £876. The church is to be built from designs by Messrs. J. E. K. and J. P. Cutts, of Southampton-street, Strand, W.C., and operations have been commenced by the builders during the past fortnight. To be built in the Decorated style, the church will consist of nave, with lean-to aisles, chancel, chancel aisle on the south side, narthex, with organ chamber on the north side of the chancel, and a vestry on the south. Accommodation will be provided for 696 people, distributed thus: nave, 424; aisles, 198; chancel aisle, 36; choir, 38. The extreme exterior length of the church will be 138ft., and breadth from wall to wall 63ft. 4in.; the interior measurement of the nave 80ft., and of the chancel 35ft. In width the nave is to be 31ft. 8in., and the aisles 10ft. 9in. From floor to roof-plate the height of the nave will be 35ft., and from ground to ridge 52ft. The aisles from floor to roof-plate will be 16ft. in height, and the chancel ridge is to be 2ft. lower than that of the nave. The church will be built of brick, with Doulting stone for dressings. The columns of the nave are to be of Portland stone. The flooring will be of wood blocks and laid on concrete. The roof will be tiled, and the line of the chancel arch will be surmounted by a flèche 20ft. in height. One special feature of the church is the narthex at the west end, approached on the north and south by porches and lobbies, the baptistery being placed in the centre, at the extreme west. The north-west porch will ultimately give place to a lofty tower and spire.

South Shields.—The Marine Parks, which were formally opened on Wednesday week, cover over thirty acres, and have been converted from waste sandhills and ballast heaps into picturesque pleasure-grounds, under the direction, and from the designs, of Mr. Matthew Hall, C.E., the borough surveyor, at a cost of £22,000, including the erection of a park restaurant and the formation of a road along the eastern boundary of the south park. The north park has been planted by Mr. J. Barns, the head gardener, and the south park by Mr. J. Peebles. In the open space between the parks is the memorial to William Wouldhave, the inventor of the lifeboat, which was first designed and built at South Shields in 1790. Its first stage is utilised as a fountain, with a basin surrounding it 22ft. in diameter, the water supply being on the north and south sides from large shells placed in semi-circular recesses. The water flows into bowls and overflows into the large basin. On the side towards the sea are placed two granite drinking fountains, with the entrance to the interior of the erection between them. The second stage contains on the west front a large medallion of Wouldhave, with the borough arms beneath, and on the east front a medallion of Greathead. A tablet on the north side has sculptured upon it the representation of the launching of the lifeboat to save the crew of a ship in distress in the distance, and on the south side is a representation of the shipwrecked and the return of the lifeboat containing the saved crew. The third stage contains a clock with four dials, by Messrs. T. Potts and Sons, of Leeds. The memorial is 10ft. square at the base, and 45ft. high. Its construction has been carried out by Mr. J. B. Farbridge, monumental mason, of South Shields, from the drawings, and under the superintendence, of Mr. J. H. Morton, F.R.I.B.A., of the same town.

Selby Abbey.—Within the past week two discoveries have been made in connection with the restoration of the south wall of the Abbey Church of Selby, now in progress under the direction of Mr. J. Oldrid Scott, F.S.A. The first was the discovery of a part of an old gravestone bearing the date of 1716. This clearly shows that part of the church which was destroyed by the fall of the tower in 1690 was rebuilt towards the end of the last century, and not in 1702, as was generally supposed. The tombstone bears the name "Merebeck." The latter discovery is more interesting. Certain foundations have been found, indicating the existence on the east side of the south transept of a Norman apsidal chapel extending eastward from the old Norman south transept. The work on this part of the restoration has been suspended for a few days, until Mr. Scott is able to inspect the foundations. There are indications of the Norman, the Decorated, the Perpendicular, and modern work in the foundations of the south wall, the present restoration being evidently the fifth that has taken place in that particular portion of the church.

Whitby.—A number of memorial stones were laid on Friday in connection with the new Brunswick Wesleyan Chapel. The old chapel, which was opened in 1814, is now being demolished, being no longer suitable, and the new one will be built on the site, on the transeptal plan, shallow galleries being provided on three sides. The seats will be arranged to accommodate about 900 worshippers, over 500 being on the ground floor. The orchestra will occupy a position to the rear of the building. In addition there are to be three vestries and a ladies' parlour and band-room. There are also to be a school, designed to accommodate 450 scholars, five class-rooms, and a room for 90 infants. The style of the building is the Romanesque of Southern France. The architects are Messrs. W. Waddington and Son, of Manchester and Burnley. The estimated outlay, including entire cost of building, draining, fencing, lighting, and warming, is about £6,000. The contractor for the work is Mr. John White, of Whitby.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLI., XLVI., XLIX., L., LI., LIII., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Roof Principal.—To "X. Y. Z." (The roof, a sketch of which you send, will answer the purpose; the upright struts should be trussed if there are no cross walls to rest them on at intervals. You do not give length of roof or the distance of principals apart. Roof Boarding.—(The diagonal mode of laying boards gives greater strength and is more durable than the horizontal mode.)—T. H. M.—Levelling Instrument. (The small level shown in our article (p. 378, 1889) was made to order from an architect's design, but is not sold. Any skilful instrument maker could supply a similar instrument. The level could be made for about 30s.)

Received.—G. W. Co.—W. O. and Son.—C. S. and P.—G. B.—H. T. and Co.—C. of S. on S.—W. Bros.—H. A. and Son.—J. T.—M. and Co.

Correspondence.

ARCHITECTS' PROPERTY IN PLANS.

To the Editor of the Building News.

Sir,—In your last week's Building News you say, "Houses of Parliament plans" and the case, "Ebdy *v.* McGowan," "represent the legal mind on this question, and have indeed made it illegal for an architect to refuse to give up the plans that he has made and been paid for" (?)

In the case of the "Houses of Parliament" plans, the understanding arrived at "by private arrangement" (if I am correctly informed) was that 1st, Plans of unexecuted work remain the perty of the architect" (?)

2nd. Plans of work executed belong to the proprietor.

In the case "Ebdy *v.* McGowan" the account had three clauses:—

1st. Charge for plans, details, spec., &c., for a church not built, but estimated for.

2nd. Charge for plans and services for No. 2 church as erected.

3rd. Charge for plans, details, spec., &c., for a vicarage house, stabling, &c., tendered for, but not built.

The rock upon which the plaintiff and defendant split was the ownership of plans "before the work was executed." The first trial was decided in favour of the "architect's account in full." A rule *nisi* was granted McGowan for a new trial to decide the question of "ownership in plans."

The solicitors on either side (without consent)—the defendant (Ebdy) not being present or consulted by telegram—made a compromise by keeping all plans and allowing commission for vicarage to be deducted from the account, but not commission for No. 1 church, not executed. "Result: drawn battle"—"case not decided by law" (?).

McGowan paid all his law costs and hotel expenses out of the church building fund, and had a balance left.

The Northern Institute of Architects started a subscription list to pay the defendant's (Ebdy) "out-of-pocket costs" (?). Perhaps the hon. sec., Mr. Thos. Oliver (Newcastle-on-Tyne) will be able to give some information how the Profession responded to the printed circular?

The case as settled stands thus:—

Plans for executed work not asked for (!). Church No. 2.

Plans of unexecuted work retained. Church No. 1.

Plans of vicarage retained (unexecuted), and commission struck out of account (by solicitors, without architect's authority). Result: no legal decision.—I am, &c.,

June 30. EBDY.

PROFESSIONAL HUMBUGS AND COMPULSORY EXAMINATION.

SIR,—It is often remarked that the architectural and kindred professions are overcrowded. It is no doubt quite true that the supply, even of highly qualified men, exceeds the demand for their services; but the state of affairs is made very much worse by the very large number of humbugs who suddenly take it into their heads to style themselves architects, surveyors, or sanitary engineers. When joiners, bricklayers, and plasterers style themselves architects and surveyors, and commercial travellers lay aside their samples and assume the title of sanitary engineer, it is high time something was done to put a stop to such a mischievous practice. By all means, I say, let us have an examination or

SOMETHING EQUIVALENT.

CHIPS.

On Sunday special services were held by the Welsh Baptists of Ynysybwl upon the occasion of opening their new edifice, which has been erected at a cost of £1,200. It is capable of seating 700 people, and is built by Messrs. Charles Jenkins and Sons, Porth, under the supervision of the architect, the Rev. Dr. Roberts, Pontypridd.

Alterations have been made to the West End Hospital, Marylebone-lane, embracing the ventilation, which is now carried out on the Boyle system.

Mr. J. Williams Dunford, M.S.A., has resigned his position as official architect to the Salvation Army. He has carried out over £80,000 worth of work for that organisation during the last two years. On leaving, he was presented by his staff, numbering twenty-nine, with an illuminated address and other interesting souvenirs. His new offices are at 100c, Queen Victoria-street, E.C., where he commences private practice.

The Prince of Wales will lay the memorial stone of the new nave of the Church of St. Saviour's, Southwark, which is about to be rebuilt from Sir Arthur Blomfield's designs, on the 24th inst.

Mr. R. H. Wood, of Rugby, having given a building to the town for an institute and museum, a public meeting was held on Monday night, and the Free Libraries Act was unanimously adopted.

The "Descent of the Holy Ghost" has been selected as the subject of the east window which is to be placed in the parish church of Wednesbury, in memory of the late Mrs. Richards, who left £1,000 towards the restoration expenses. Mr. Basil Champneys, B.A., is engaged in the preparation of designs for a reredos of Derbyshire marble, which is to be placed in the church at the cost of an anonymous donor.

The Tottenham and Forest Gate Junction Railway Bill was passed on Monday by a Committee of the House of Lords, and ordered to be reported for third reading, with some amendments.

During the half of the present year which closed on Saturday, there have been approved of by the Improvement Committee, Belfast, plans for 1,936 new edifices, a larger number than was ever passed during the whole of any previous year in the history of the city. Among them were plans for several churches and a number of large warehouses, but the great majority were artisans' dwellings.

Vauxhall Park, South Lambeth-road, will be opened by the Prince of Wales on Monday next.

Intercommunication.

QUESTIONS.

[10307.]—**Colouring Cement.**—Can anyone give particulars of a process for colouring cement grass-green permanently by means of a pigment mixed with it?—W. BEESTON.

[10308.]—**Architect's Responsibility.**—Will some reader kindly say if an architect can be held responsible for defects to a building which has been completed more than five years, and for which no previous claim has been made, and, if so, has he a counter-claim against the builder, who, in the matters complained of, did not carry out the work properly or in accordance with the specification? Reply will much oblige—AN OLD SUBSCRIBER.

[10309.]—**Devonshire Churches.**—Would some of your readers kindly advise me as to churches of the Gothic style, &c., in Devonshire which are worth studying and taking measured drawings.—C. H. S.

[10310.]—**Quantity Surveying.**—Can any of your readers kindly inform me as to how the following items are usually measured by modern London quantity surveyors? Deduction of stone sills and strings from brickwork. Banister Fletcher, in his work on Quantities, page 14, states that "No deduction is made for window-sills or strings *under* 6in. in height." Whereas "Leaning," in his work, page 30, states that "Stonework is not deducted unless *over* 6in. in height." So that, according to Fletcher, a 6in. sill would be deducted, but, according to Leaning, not. Also in the measurement of fir in floors and roofs, Fletcher states, on page 51, "Where timbers are framed—that is, mortised and tenoned—they must be kept separate from the works that are only fixed. . . . . In quantities all works are understood to be fixed, unless stated to the contrary, and would include the nailing, lops, dovetails, &c." Whereas Leaning, on page 57, states, "All floors are taken as framed except ground-floors, and fir framed in roofs as purlins, ridges, valleys, hips, dragon pieces, rafters." Which of the above rules is generally followed in London? As a matter of fact, in all single-joist floors the only parts mortised and tenoned are the timbers trimmed to fireplaces, &c., and the same applies to roof timbers (excepting the tenons, of course). In addition to paying for tenons as "fir framed and fixed in tenons," should they be paid for also by number for hoisting? The authorities appear to differ on that point.—PROVINCIAL.

[10311.]—**Civil Engineers' Fees.**—What would be a fair price to pay an engineer for constructing a road through a wood? Road would be three-quarters of a mile long, 20ft. wide, and varying in depths from 1 to 5ft. I want him to prepare all necessary plans, quantities, estimate, and contracts, and to visit the works every fortnight. Is there a fixed scale?—TO DO AS I WOULD BE DONE BY.

[10312.]—**Gothic Vaulting in Plaster.**—Would one or other of your readers oblige with particulars how best to carry out Gothic vaulting in plaster secured to woodwork?—what description of plaster or cement, what method of suspending the same from couples, say 12ft. apart, and crossing a 30ft. span?—SUBSCRIBER.

REPLIES.

[10303.]—**Area of Segment of Circle.**—In answer to Arthur Shaw, the simplest method is:—Take two-thirds of the chord, then add the square of the versed sine divided by twice the chord, then multiply their sum by the versed sine = area.—H. RAVEN.

[10306.]—**Tall Chimney.**—Your correspondent will find in constructing caps for tall chimneys the plainer and simpler the better, for at such a height as 180ft., which "J. T." gives, you could not see the detail. If your correspondent procured "Bancroft's Tall Chimney Construction," which is advertised in the BUILDING NEWS, he will see a litho. plate giving a variety of caps. He will also read, in chapter under head "Caps," that much expense is often incurred by having too elaborate a finish to the top of a tall shaft.—J. JACKSON.

The restoration of Dunblane Cathedral, once the scene of the labours of the saintly Scottish Archbishop Dr. Leighton, makes satisfactory progress under the direction of Dr. Rowand Anderson, of Edinburgh. Particular attention is being paid to the lower parts of the western gable, with the great west window, surmounted by the bay-leaf window, made famous to this generation by Mr. Ruskin's description and praise. The cathedral has been illustrated in the BUILDING NEWS for May 20 and Oct. 14, 1870; Dec. 14, 1878; and July 23, 1885.

It is proposed to form a "Methodist Settlement" in Bermondsey, at an outlay of about £8,000 for buildings. In the plans, which have been prepared by Mr. Elijah Hoole, accommodation is provided for a warden and twenty residents. The building will contain a lecture hall, library, class-rooms, a large gymnasium, a workshop, a chemical laboratory, a tennis ground, a swimming bath, and provision for Evangelistic services.

The foundation stones of a new Wesleyan chapel and school were laid in Pallance-road, Northwood, Isle of Wight, on Wednesday week. The chapel will be Gothic in style, and will be seated for 100 worshippers. The schoolroom will accommodate 70 children. Mr. S. E. Tompkins, of Sandown, is the architect, and Messrs. Ball and Son, of West Cowes, are the builders.

Viscount Portman has presented the collection of fossils at Hestercombe, his place in Somersetshire, which contains 20,000 specimens, to the Somerset Archæological Society, and it will be placed in the Taunton Museum.

LEGAL INTELLIGENCE.

SAUNDERS AND COLLARD V. THE BROADSTAIRS LOCAL BOARD.—The proceedings in connection with this action came to a termination before the Official Referee on Friday last, when the decision was in favour of the Local Board for £4,579, as damages for defective work in connection with the drainage of the town, excessive charges, and false measurements. The decision involves Messrs. Saunders and Collard in the payment of the costs of action, and the Official Referee refused to stay execution.

DAMAGES FOR NEGLIGENCE AGAINST ARCHITECT AND CONTRACTOR.—WAIN V. OLDREY AND CO. AND MILLER.—(Queen's Bench Division, July 2.—Before Mr. Justice Mathew and a Special Jury.)—In this case Mrs. Eliza Wain, a widow, sued under Lord Campbell's Act for compensation for the loss of her husband, Alexander Wain, a bricklayer, who sustained fatal injuries on November 9, 1888, from the fall of a house in the course of construction at the corner of Titchfield-street and Ridinghouse-street, Oxford-street, which, as recorded in our columns at the time, caused serious hurt to fifteen persons and the death of five, including the plaintiff's husband, and which the plaintiff alleged was due to negligence on the part of both the defendants—Messrs. Oldrey and Co., the builders, and Mr. Miller, the architect, who was also clerk of the works. The defendants denied negligence and liability.—Mr. Willis, Q.C., and Mr. W. Graham were counsel for the plaintiff; Mr. Muir Mackenzie and Mr. Scarlett being for the defendants. The alleged negligence had reference to the construction of the building and to the fact of some 30,000 bricks having been stored on the ground floor. The jury considered both defendants responsible, and returned a verdict for the plaintiff for £250. Mr. Justice Mathew gave judgment accordingly, with costs.

PARLIAMENTARY NOTES.

THE TATE COLLECTION.—Dr. Farquharson asked the Chancellor of the Exchequer, on Tuesday, whether the Trustees of the National Gallery accepted Mr. Tate's generous offer subject to the condition that the Government should provide sufficient space to accommodate the pictures, and whether the Trustees had repeatedly pressed on the Government the desirability of enlarging the existing building? The Chancellor of the Exchequer said it was true that the Trustees of the National Gallery had repeatedly urged on the Government the desirability of enlarging the existing building, and arrangements had been made for providing additional accommodation with a view to a permanent gallery for British art.

STATUES, MEMORIALS, &c.

NORTH BERWICK.—There has been erected at North Berwick a granite cross, commemorative of the brave act by which Miss Catherine Watson, of Glasgow, sacrificed her life last summer in rescuing a boy from drowning. The place selected for the erection of the cross is close to the shore, and between the East and West Bays. The cross is purely Celtic in style. It has been wrought out of a single block of red granite, and measures 14ft. long and 39in. wide at the arms. The front is carved with ornament of a strictly Celtic type, while the back and edges are wrought out harmoniously with the front. In a panel formed at the foot of the cross is an inscription carved in raised letters. With a view to giving elevation, and forming a base for the cross, it has been placed upon a large boulder which was brought up from the beach. Upon the front of the boulder is to be placed a medallion of Miss Watson. It is being executed in bronze, and is the gift of her fellow-students in the School of Arts, Glasgow. The whole monument, which has an elevation of about 20ft., has been placed on a mound. It is to be surrounded with a stone cope, surmounted by an iron railing. The design was prepared and the work carried out by Messrs. S. M'Glashen and Son, Canonmills Bridge, Edinburgh.

The new tower at Clifton College, Bristol, which completes the college buildings, has been opened at this year's commemmoration. It contains three spacious rooms, which will serve as the council-room, the sixth-form room, and the natural-history school. The mosaic picture, reproducing Mr. Holman Hunt's painting of "Christ in the Temple," is now placed in the chapel as a reredos in an alabaster frame. Messrs. Dunn and Hansom, of Bristol, are the architects.

The Swansea Steam Joinery Company's Works, Strand, Swansea, were completely destroyed by fire on Monday. The damage is estimated at £4,000.

The alterations and improvements at Barnwell Castle, to the amount of £3,000 have been intrusted to Mr. George Henson, of Wellingborough, the contractor for the Nene Bridge.

Our Office Table.

YESTERDAY the popular and hard-working past-president of the Architectural Association, Mr. Herbert D. Appleton, F.R.I.B.A., changed his name, and married Miss Searleswood, whose patronymic he has adopted. We gave Mr. H. D. Searleswood's portrait with biographical notice in our issue of March 21st last. We assure him of our congratulations.

IN Sir James Gowans, who died on Wednesday week at the age of sixty-nine, the City of Edinburgh has had an almost ideal Lord Dean of Guild. His early training in an architect's office, his long and successful career as a builder and railway contractor, and his services from 1868 to 1880 as chairman of the Public Health Committee of the Edinburgh Town Council eminently qualified him for the Guildry chair of that city, which he has occupied for the past five years. His large practical experience of all kinds of building operations enabled him to detect at once imperfect and objectionable points in the plans for new buildings and alterations submitted to the court, and his mingled firmness and vigour and power to grapple with details were brought to bear on everything which came before him. "Light and Air" was his favourite text, and he insisted on ample ventilation and lighting, refusing to pass plans which did not comply with his views. Among his works as a railway contractor may be mentioned the sections of the Highland system between Dunkeld and Ballinluig and Dalwhinnie and Boat-o'-Garten; the Edinburgh and Bathgate line, that to North Berwick, the Dundee and Newtyle line, and the Crieff branch of the Caledonian system. He essayed to solve the problem of how to house the working classes comfortably at a remunerative rate, and designed and built many dwellings in Edinburgh. The building now known as the Synod Hall was erected as a West-end theatre, and proved an unfortunate speculation for him and for many others. As contractor to the Edinburgh Street Tramways Company he constructed all the lines originally laid by them. He was knighted four years ago, on the occasion of the Queen's visit to the Edinburgh Exhibition, and in the disposal of the surplus of that undertaking the committee acknowledged his energetic efforts to insure its success by presenting him with £2,000, an act which was much criticised at the time.

THE annual meeting of the British School of Archæology at Athens, was held at Burlington House on Wednesday, under the presidency of Mr. F. C. Penrose, F.S.A. Mr. G. A. Macmillan, the hon. secretary, read the report. The session now ended had been the most successful the school had yet held. Twelve new students had been admitted, and important excavations had been begun upon the site of Salamis, and valuable contributions to our knowledge of ancient art and ancient life might be expected. The school had also undertaken excavations on the site of Megalopolis. Mr. R. W. Schultz and Mr. Barnsley had continued during the past session their previous labours on Byzantine architecture. As to the financial condition of the school, if its present income of £440 were absolutely assured, it might at least hold its own, though under ordinary circumstances that sum would do hardly more than provide the salary of a competent director. If only by endowment or by annual subscriptions a permanent income of £600 or £700 a year could be assured, no one need doubt that the British School at Athens would amply justify its foundation. He moved the adoption of the report, which was seconded by the Bishop of Southwell. Sir C. T. Newton moved and Sir George Bowen seconded the appointment of officers of the society. The Director (Mr. E. A. Gardner) read his annual report, in which he said that the British School was twice as numerously attended as any of the foreign schools at Athens. Mr. Tubbs read his account of the work of the Cyprus Exploration Fund during the past year, and Mr. Loring read his report of the labours undertaken at Megalopolis.

ACCORDING to a correspondent of the *Standard*, researches as to the advantages of whitewashing the walls of rooms inhabited by persons suffering from contagious maladies, have lately been conducted by Dr. Giaxa at the Hygienic Institute of Pisa University. It was desired to establish what influence whitewash or limewash might have on the microbes of tuberculosis, typhoid, carbuncle, and other diseases. Portions of walls were smeared with substances adapted to the development of the microbes, were then infected, and afterwards covered with a coat of whitewash. Twenty-four hours afterwards these portions—from which all external agents had been carefully excluded—were examined. It was found that the bacillus of tuberculosis, carbuncle, and some other diseases resisted even renewed applications of whitewash; but that the cholera and typhoid microbes were destroyed by one application.

THE Roman pavement at Woodchester, which is unsurpassed among those yet found for beauty of design and richness of colouring, is about to be uncovered, and will remain so from Tuesday, the 29th inst., till Monday, August 11, inclusive, during which time it will doubtless be visited by numbers who had not the opportunity of seeing it when it was opened for a short time ten years ago, as well as by many who then saw it and will be glad to visit it again. It is within two miles of Stroud, on the Great Western line, and only about ten minutes' walk from Woodchester Station, on the Midland branch line.

SIR WM. FETTES DOUGLAS, the president of the Royal Scottish Academy, has received from Mr. William McEwan, M.P., a donation of £5,000 for the purchase of pictures for the National Gallery at Edinburgh. Mr. McEwan has, the *Scotsman* states, had in view the purchase of some important picture for the National Gallery, and it was his desire, if possible, to get a Rembrandt, of whose works he is an admirer. He has now, however, intrusted the selection of the picture to Sir William Fettes Douglas, and though an effort will be made to secure a Rembrandt, should one turn up at a price within the amount of the donation, should Rembrandt's pictures continue to fetch the fancy prices which have recently been reigning, the money will be applied to the purchase of one or two, or even three, pictures of more moderate cost.

THE annual report of Mr. J. W. Brown, the borough engineer and surveyor of West Hartlepool, states that the past year has been marked with much activity in nearly all the departments of the corporation, and while much has been done, there remain many works to complete, and several schemes of considerable importance are still under the consideration of the council, such as the sea-wall and esplanade, new abattoirs, market improvement, new town-hall, &c. The total length of public highways has been increased from 13⅝ to 14½ miles, while £5,807 has been expended in constructing streets not yet taken over from owners of property. During the twelvemonth 238 certificates for occupation were granted, as compared with 139 in the previous year.

MR. E. H. SHORLAND, of St. Gabriel's Works, Erskine-street, Manchester, has just published a new catalogue of his various patented warming and ventilating appliances. First in the catalogue come the well-known warm-air ventilating "Manchester grates," which are shown in a variety of designs, some suitable for schools, hospitals, and other public institutions, and others for private houses, these grates being made in almost any design from the plainest to the most ornamental and costly. After the Manchester grates come the inlet and exhaust roof ventilators, and we notice several new designs amongst them. These ventilators are made in galvanised rolled steel, iron, and zinc, at almost all prices, and are in great demand. After the ventilators come the "Manchester stoves," which are so largely used in hospitals and other public buildings. They are shown with tiled sides, in various designs, and with either ascending or descending smoke-flues. They are also made "double-fronted"—*i.e.*, with a fire at each end. The long list of places where Mr. Shorland has recently supplied his patent Manchester grates and stoves fully proves their popularity.

Mr. Samuel Harris has presented a new church, called the Church of the Martyrs, to Leicester. It is situated on the west side of the river, and was planned by Mr. Christian. There will be accommodation for 700 persons. The cost is over £10,000.

The Duke of Clarence opened at Scarborough, on Friday, the new marine drive and promenade, which have been completed at a cost of £42,000.

Trade News.

WAGES MOVEMENTS.

NORTH SHIELDS.—The operative stonemasons at North Shields have come out on strike for an advance of wages, demanding 8½d. per hour instead of 8d., which has hitherto been paid. The masters are generally opposed to any concession.

EDINBURGH AND LEITH.—A meeting of the Edinburgh and Leith joiners was held in the Trades Hall on Friday night to receive the report of the committee appointed some time ago to draw up rules for the formation of a Board of Conciliation. The rules having been submitted, they were at considerable length discussed, and after slight amendment the secretary was instructed to forward them to the Employers' Association for their consideration.

CHIPS.

Mr. John Page, chief engineer of the Dominion Canals and the projector and constructor of the enlarged St. Lawrence Canal system, died at Philadelphia on Wednesday in this week.

At a meeting of the South Wales University College at Cardiff on Wednesday, Mr. Archibald C. Elliott was elected to the Engineering Professorship just founded at Cardiff. He will enter on his duties in October.

A new mortuary is being built for Liverpool at the south end of the Prince's Dock. It is of red brick, in four separate compartments, and is modelled on the plans of the Morgue at Paris. Mr. J. A. Berrington, A.R.I.B.A., is the architect.

A set of new mosaics were unveiled at the church of the Holy Name, Oxford-road, Manchester. The mosaics, which are placed in the panels of the new pulpit, represent the English martyrs (Blessed Thomas More, Blessed Edmund Campion, S.J., and Blessed Cardinal Fisher).

The foundation stone of a new church for Westcombe Park was laid on Saturday. The building will, when completed, have sitting accommodation for 800 persons, and the total cost, including nave, chancel, and boundary walls, will be £8,000. The interior will be of red brick, relieved with stone dressings, and a tower 150ft. in height is included in the plans.

A portrait of Mr. Cadge, surgeon, of Norwich, painted by Professor Herkomer, R.A., was presented to the Norfolk and Norwich Hospital on Saturday.

The Oxford congress of the British Archæological Association will be opened on Monday next by an address by the Earl of Winchilsea and Nottingham, past president.

A new church, dedicated to St. Peter, was opened at Ely on Monday by the Bishop of the Diocese. The building has been erected by Mrs. Sparke, in memory of her husband, the late Rev. Edward Bowyer Sparke, Canon of Ely, at a cost of £4,000, and provides accommodation for 250 persons. The architects are Messrs. J. P. St. Aubyn and Wadling, of the Middle Temple.

The Mayor of Maidenhead has presented his estate known as Kidwells Park to the borough for a recreation and pleasure ground. The park is 12 acres in extent, is situated in the heart of the town, and is estimated to be worth £12,000.

A new organ, which has been erected at the Horkinstone Baptist chapel, Oxenhope, by Messrs. Driver and Haigh, of Bradford, was opened on Saturday. The organ, which has 21 speaking stops and nearly 1,200 pipes, has cost about £270, and the organ chamber £70.

The Royal Infirmary at Liverpool, now in course of erection from designs by Mr. Alfred Waterhouse, R.A., will be opened by the Duke of Clarence and Avondale in October next.

It is proposed to unveil the effigy of the late Archdeacon Iles placed in Lichfield Cathedral on Thursday, the 17th inst.

The sale of the "Farnley Turners" has illustrated afresh the value of high-class works of art as an investment. The Rhine sketches fetched £5,434 on Friday; the original purchaser gave Turner £500 for them.

New public baths for Gorton, built at a cost of £4,500, were opened on Saturday. Mr. T. H. Maybury, of Booth-street, Manchester, was the architect.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

BANGOR.—For the erection of a pavilion for the National Eisteddfod of Wales, to be held in Bangor city in September next. Mr. W. Lloyd-Jones, architect:—
Williams, E. (accepted)

BASFORD.—For proposed additions to Basford brassworks for Messrs S. Smith and Son. Mr. A. H. Goodall, Nottingham, architect:—

Hutchinson, J.	£545 0 0
Slight, G. S.	542 5 0
Pinket, W.	530 0 0
Wheatley and Maule	525 0 0
Messom, F.	519 0 0
Clayson, J.	515 16 0
Barlow and Whittaker	515 0 0
Scott, H.	510 0 0
Cargill, S. and J.	498 0 0
Cuthbert, T.	494 10 0
Emerson and Franks	490 4 0
Adams, J. J.	490 0 0
Hind, E.	486 0 0
Attenborrow, J.	485 0 0
Hodson, J., and Son	485 0 0
Gilbert and Gabbitas	484 1 0
Simons, W. H.	479 0 0
Cooper, J.	477 0 0
Wartnaby, F.	475 0 0
Taylor, W. H.	470 10 0
Evans, F.	470 0 0
Keeling, B	467 0 0
Shaw, J. (accepted)	449 0 0

BRENTWOOD, ESSEX.—For the erection of three villas, St. Thomas's-road, for Mr. S. Ray. Mr. A. T. G. Woods, M.S.A., Brentwood, architect:

Hammond, Romford	£1,440 0 0
Dupont, Colchester	1,375 0 0
Winter Bros. Brentwood	1,350 0 0
Rogers and Robson, Brentwood	1,275 0 0
Whitehead, Forest Gate, E.*	1,125 0 0

*Accepted.

BIRMINGHAM.—For foundry buildings, Icknield-square, for Messrs. J. Archdale and Co. Mr. W. Hale, F.R.I.B.A., architect. Quantities by Mr. G. Kenwick:—

Moffatt, J.	£1,630 0 0
Bryant	1,569 0 0
Currall and Lewis	1,515 0 0
Webb, W.	1,477 0 0
Sapcote, W., and Sons	1,431 0 0
Barnsley, J., and Sons	1,398 0 0
Gowing and Ingram	1,371 0 0
Smith, J., and Sons (accepted)	1,365 0 0

BROMLEY, KENT.—For making up Yester-road, for the Bromley Local Board. Mr. H. S. Cregeen, surveyor:—

Trueman, J. C.	£340 0 0
Peill, E., and Sons	247 17 6
Lansbury, T. (accepted)	242 14 1

BROMLEY, KENT.—For sewer extension in Plaistow-lane, for the Bromley Local Board. Mr. H. S. Cregreen, surveyor:—

Trueman, J. C.	£126 0 0
Lansbury, J.	116 17 0
Peill, E., and Sons	113 0 0
Rose, J. (accepted)	107 16 6

BROMLEY, KENT.—For constructing a new road at Bromley Common, for the Bromley School Board. Mr. H. S. Cregreen, surveyor:—

Peill, E., and Sons	£265 0 0
Lansbury, J. (accepted)	260 10 0

CHIPPENHAM.—For addition to the Shambles Hotel, and new shop and premises adjoining, for Mr. H. Mead. Mr. W. H. Stanley, Trowbridge and Westbury, architect:—

Moore, G., Trowbridge	£1,395 0 0
Downing & Rudman, Chippenham	1,287 0 0
Ponton, F. H., Warminster	1,250 0 0
Smith, J., Chippenham (accepted)	1,071 10 0

FAIRFIELD.—For the erection of a villa residence, coach-house, stables, &c., for Mr. W. Johnston. Mr. J. H. Burton, Ashton-under-Lyne, architect:—

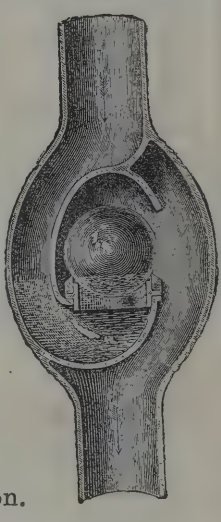
Hurst, W., Droylsden	£3,048 0 0
Williamson, J. W., Ashton-under-Lyne	2,906 0 0
Jackson, E. and C., Openshaw	2,902 0 0
Gibson, J., Dukinfield	2,860 0 0
Underwood and Bros., Dukinfield	2,860 0 0
Fitton & Bowness, Ashton-under-Lyne	2,819 0 0
Storer, T., Denton	2,800 0 0
Whitell, R., Manchester	2,799 0 0
Williams, O., Manchester	2,797 0 0
Bates, J., Droylsden	2,780 0 0
Darison, J., Manchester	2,780 0 0
Robinson, J., Ashton-under-Lyne	2,733 0 0
Wallworth, C., Gorton (accepted)	2,650 0 0



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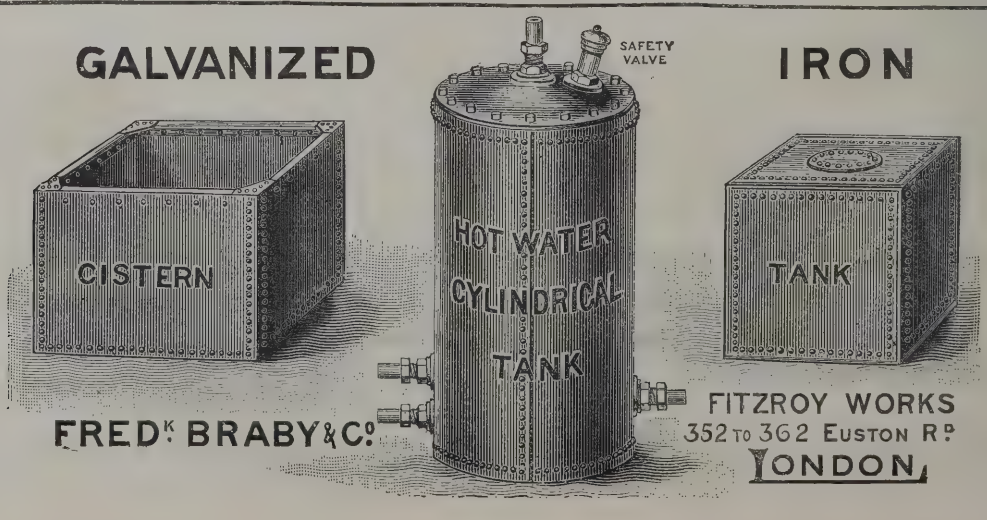
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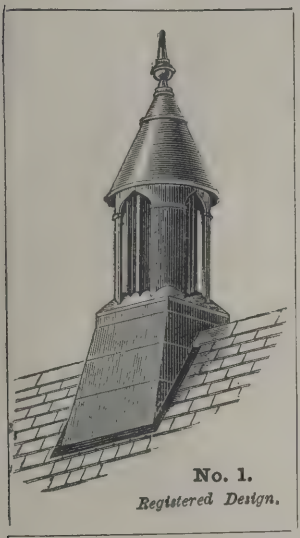
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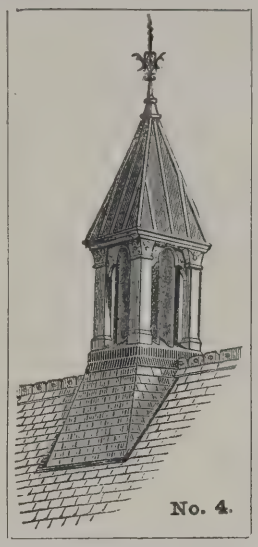
No. 1.
Registered Design.

The most Powerful Exhaust and

CHEAPEST VENTILATOR IN THE MARKET.

IMPERVIOUS TO WET AND DOWN-DRAUGHT.

Strongly made of the Best Steel, Galvanised, and Finest Workmanship.



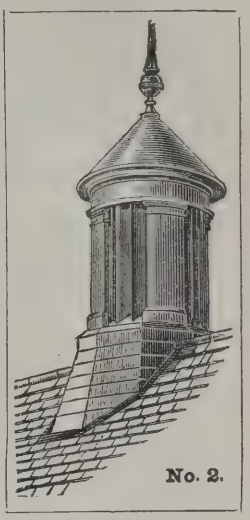
No. 4.

CAUTION TO ARCHITECTS.

FRAUDULENT SUBSTITUTION.

Having received complaints alleging the failure in certain cases of the Air-Pump Ventilator, upon examination being made it was found in every instance that the contractor had substituted (to secure a greater profit to himself) a cheap and inferior Ventilator resembling, in outward appearance, the Air-Pump Ventilator which had been specified to be used.

It is respectfully requested that, in specifying the Ventilator, the words "ROBERT BOYLE & SON'S LATEST IMPROVED PATENT SELF-ACTING AIR-PUMP VENTILATOR" be used.



No. 2.

ROBERT BOYLE & SON'S

Latest Improved Patent (1882)

SOIL PIPE, DRAIN, & SEWER VENTILATORS.

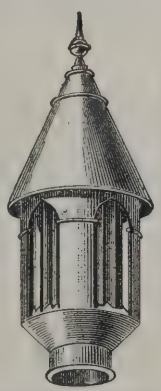
The Cheapest and most efficient in the Market.

FROM **12s.** EACH.

Approved of and used by Baldwin Latham, C.E., Bailey-Denton, C.E., W. Eassie, C.E., and by all the leading Architects, Sanitary Engineers, Builders, and Plumbers in the United Kingdom.



SOIL PIPE VENTILATOR.



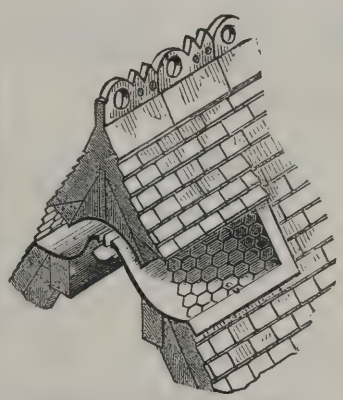
DRAIN OR SEWER VENTILATOR.

ROBERT BOYLE & SON'S

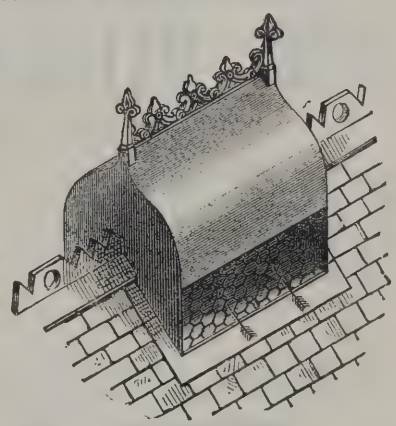
Latest Improved Patent (1882)

CONCEALED ROOF AND RIDGE VENTILATORS.

The most reliable and powerful Ventilators of their class in existence.



CONCEALED ROOF VENTILATOR.

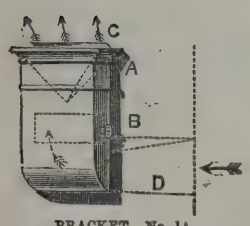


RIDGE VENTILATOR.

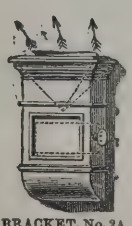
ROBERT BOYLE & SON'S

LATEST IMPROVED AIR INLET BRACKETS AND WALL PANELS,

FROM **10/-** EACH.



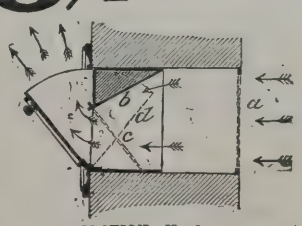
BRACKET. No. 1A.



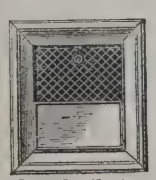
BRACKET. No. 2A.



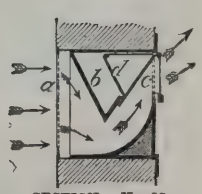
PANEL. No. 2B.



SECTION. No. 2B.



PANEL. No. 3C.



SECTION. No. 3C.

N.B.—All the above Appliances are Manufactured solely by us, and none are genuine unless they bear our Registered Title and Trade Mark, any Infringement of which involves a penalty of Two Years' Imprisonment.

Registered Title SELF-ACTING AIR-PUMP VENTILATOR and Trade Mark.

Robert Boyle & Son, Ltd., 64, Holborn Viaduct, London; and 110, Bothwell St., Glasgow.

CATALOGUES, PRICE LISTS, &c., SENT POST FREE ON APPLICATION.

EAST GRINSTEAD.—For alterations and additions to Mr. C. M. Wilson's drapery business. Mr. Sidney A. Ell. A.R.I.B.A., East Grinstead, architect:—

Morris, J.	£2,397 0 0
Rice, C	1,769 17 0
Chitty, J.	1,569 0 0
Stevens, F.	1,239 0 0
Pledge, W.	1,157 0 0

GATESHEAD-ON-TYNE.—For the erection of schools at Whitehall, for the Gateshead School Board:—

Reed, N. and R.	£6,770 0 0
Lowrie, J. and W.	6,660 0 0
Ross, J.	6,485 0 0
Lamb, T. R.	6,398 0 0
Elliott, J.	6,250 0 0
Atkinson, H.	6,073 0 0
Harrison and Lowes,	6,063 0 0
Pringle, A.	5,832 0 0
Middlemiss Bros.	5,788 0 0
Haswell and Waugh	5,761 0 0
Hutchinson, T. H. (accepted)	5,693 0 0

ILMINSTER.—For the erection of house and offices and other buildings at Lambrook. Mr. G. B. Jewell, M.S.A., Yeovil, architect:—

Clatworthy and Shire (accepted).

KENNINGTON.—For rebuilding 46, Kennington-road. Messrs. Hudson and Booth, 17, Godliman-street, E.C., architects. Quantities by Mr. H. Lovegrove, 26, Budge-row, E.C.:—

Larter, W., and Son	£2,275 0 0
Greenwood, J.	2,183 0 0
Mortar, J.	2,115 0 0
Hall, Beddall, and Co.	2,100 0 0
Higgs, F. and H. F.	2,084 0 0
Spencer and Co.	2,080 0 0
Jerrard, S. J.	1,987 0 0

LEICESTER.—For St. Leonard's Vicarage, Leicester. Mr. J. C. Traylen, diocesan surveyor, Stamford, architect:—

	House.	Fencing.
Roberts Bros., Stamford	£1,198 0 0	£120 0 0
Halliday, S. F., Stamford	1,197 5 0	83 0 0
Bentley, S. and E.	1,158 0 0	73 0 0
Herbert, T. and H.	1,134 0 0	103 10 0
Jewsbury, J. O.	1,110 0 0	80 0 0
Clarke and Garrett	1,100 0 0	95 0 0
Bland, T., and Son	1,075 0 0	97 10 0
Elliott, N.	1,072 5 0	93 10 0
Hutchinson, T.	1,054 10 0	90 16 0
Bland, H.	1,040 0 0	85 0 0
Duxbury, G.*	990 0 0	79 0 0

Rest of Leicester.
* Accepted.

LONDON, E.C.—For the construction of the superstructure of the new fruit and vegetable market, and for alterations in the basement of the Central General Market, for the City Corporation. Mr. A. Peebles, architect:—

Rudd and Sons, Grantham (accepted) £41,973

LONDON.—For decorations, &c., at 14, Trebovir-road, Earl's-court, for the National Freehold Land Society:—

Cordell	£334 12 0
Bane Bros.	258 0 0
Young and Lonsdale, Herne Hill	237 0 0
Hamilton	235 16 6
Wyatt (accepted)	178 0 0

LONDON.—For alterations and additions to the Spanish Patriots Tavern, White Conduit-street, Islington, for Messrs F. J. Newport and Co. Mr. F. G. Grierson, 9, Old Jewry Chambers, E.C., architect:—

Hollingsworth, H. H.	£294 0 0
Goodall, S.	285 0 0
Courtney and Fairbairn	258 0 0
Olver and Richardson	253 0 0
Vollar, F., Wood Green	251 0 0

Pewterer's work:—
Davis and Son, Old Kent-road.
Gasfitter's work:—
Ungar and Co.

MORTLAKE, SURREY.—For the erection of a Conservative club, for the Mortlake Conservative Club Co., Ltd. Mr. T. Potter, Sevenoaks, architect:—

	A.	B.	Time.
Hill, J., Barnes—	£3,768 18 0	£195 10 0	6 Months.
Charteris, D., London—	2,937 0 0	160 0 0	7 ,,
Killby and Gayford, Finsbury—	2,867 0 0	157 0 0	5 ,,
Goddard and Sons, Farnham—	2,845 0 0	162 0 0	9 ,,
Hensler, G. W., Richmond—	2,835 0 0	179 0 0	—
Hughes, R. G., Mortlake—	2,822 0 0	175 0 0	—
Lansdown, Richmond—	2,820 0 0	169 0 0	—
Wallis and Sons, Maidstone—	2,794 0 0	148 0 0	6 ,,
Hunt, A., Barnes—	2,719 0 0	146 0 0	6 ,,
Toms, G., Camden Town*	2,719 0 0	128 0 0	4 ,,
Egan and Co., Mortlake—	2,705 0 0	130 0 0	6 ,,

* Accepted subject to deductions.
A.—Estimate for club and hall. B.—For gallery

LEOMINSTER.—For the restoration of the tower of the priory church. Mr. F. R. Kempson, of Hereford, architect:—

Millward, Leominster	£2,208 0 0
Edwards, Leominster*	1,470 0 0
Jones and Son, Sedgeley	1,400 0 0
Collins, T., Tewkesbury	1,368 0 0

* Accepted as reduced to £1,345 6s. 2d.

MARYLEBONE.—For the erection of new gateways, &c., at their dispensary, East-street, Marylebone, W., for the guardians of the poor of the Parish of St. Marylebone. Mr. H. S. Snell, F.R.I.B.A., London, architect:—

Wall Bros., Kentish Town	£429 0 0
Bamford, W., Pentonville	410 0 0
Lovden, W. H., and Son, Upper Tooting	379 0 0
Nye, T., Ealing	339 0 0
Godson, G., and Sons, Kilburn	313 0 0

NOTTINGHAM.—For proposed alterations and additions to Alfreton-road Board Schools, Nottingham, for the Nottingham School Board. Mr. A. H. Goodall, Nottingham, architect. Quantities by the architect:—

Wheatley and Maule	£625 0 0
Shaw, J.	593 0 0
Hutchinson, J.	590 0 0
Attenborrow, J.	589 0 0
Clarke, A. B.	580 0 0
Adams, J. J.	578 0 0
Emerson and Franks	570 15 0
Barlow and Whittaker	570 0 0
Hind, E.	564 0 0
Cuthbert, T.	560 0 0
Cooper, J.	551 10 0
Oscroft, J.	549 0 0
Evans, J.	546 0 0
Wartnaby, F. (accepted)	539 0 0

All of Nottingham.

PLYMPTON.—For residence at Plympton, near Plymouth, for Mr. T. Martin. Messrs. J. W. Rowell and Son, Newton Abbott, architects. Quantities supplied by the architects:—

May, T.	£4,777 0 0
Rundle Bros., Kingsbridge	4,689 0 0
Lapthorne and Goad	4,655 0 0
Pethick Bros.	4,644 0 0
Lethbridge, A. R., and Son	4,615 0 0
Pitwood and Hellings, Plympton	4,226 0 0
Blowey, P.	4,175 0 0
Trevena, W.	4,159 0 0
Kennedy, T.	4,094 5 6

Rest of Plymouth.

[As the amount of the lowest tender is in excess of the sum proposed to be expended, the architects will probably reduce the size of the house.]

WM. OLIVER & SONS, 120, BUNHILL ROW, LONDON, E.C.,

HOLD THE LARGEST STOCK IN THE UNITED KINGDOM OF

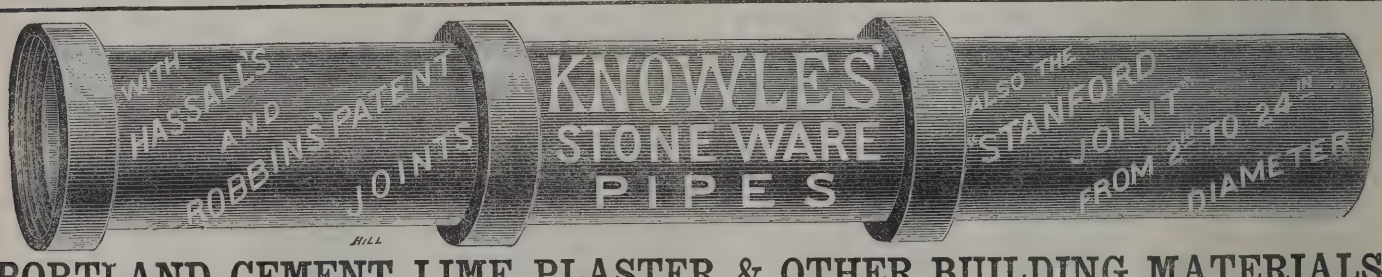
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Chief London Office: 38, KING'S ROAD, ST. PANCRAS, N.W.

Telegraphic Addresses:—London Office, "JOHN KNOWLES, LONDON." Works Office, "KNOWLES, WOODVILLE." London Telephone No. 7587.
Sheffield Telephone No. 11.

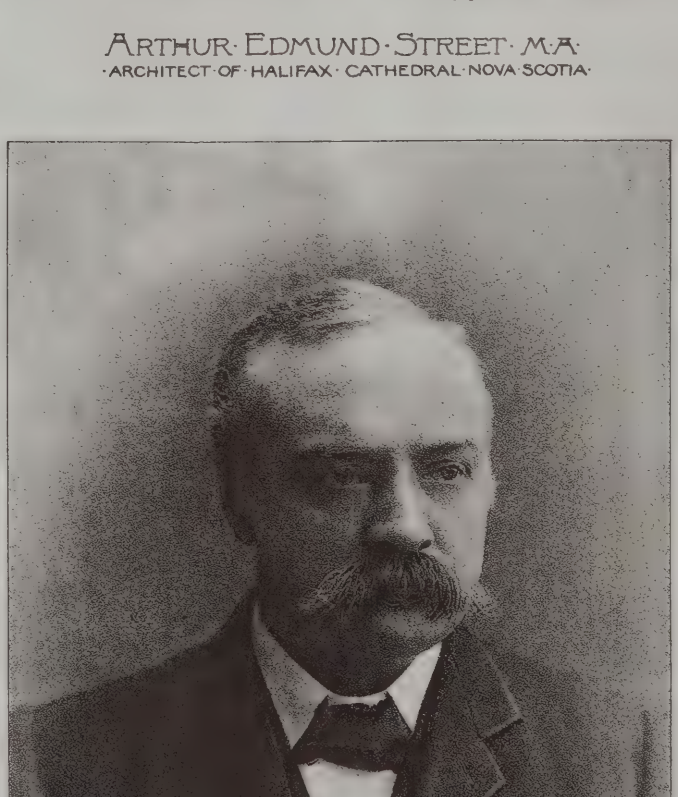


A. E. Street

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· ARCHITECT · OF · HALIFAX · CATHEDRAL · NOVA · SCOTIA ·

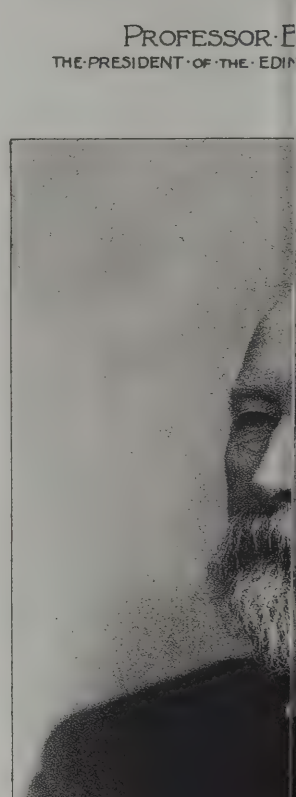


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THE · PRESIDENT · OF · THE · EDIN



David Barclay

DAVID · BARCLAY · (H · & · D · BARCLAY)
PRESIDENT · OF · THE · GLASGOW · ARCHITECTURAL · ASSOCIATION ·



JAMES
ARCHITECT · OF · ST



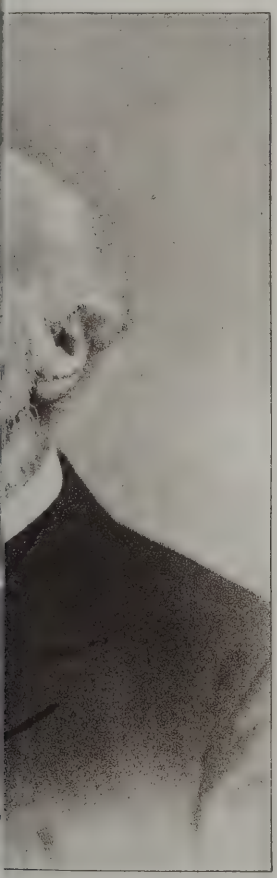
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·F·R·I·B·A·
4· NEWINGTON·S·E·



Hugh Barclay

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ARCHITECT·OF·GREENOCK·MUNICIPAL·BUILDINGS·

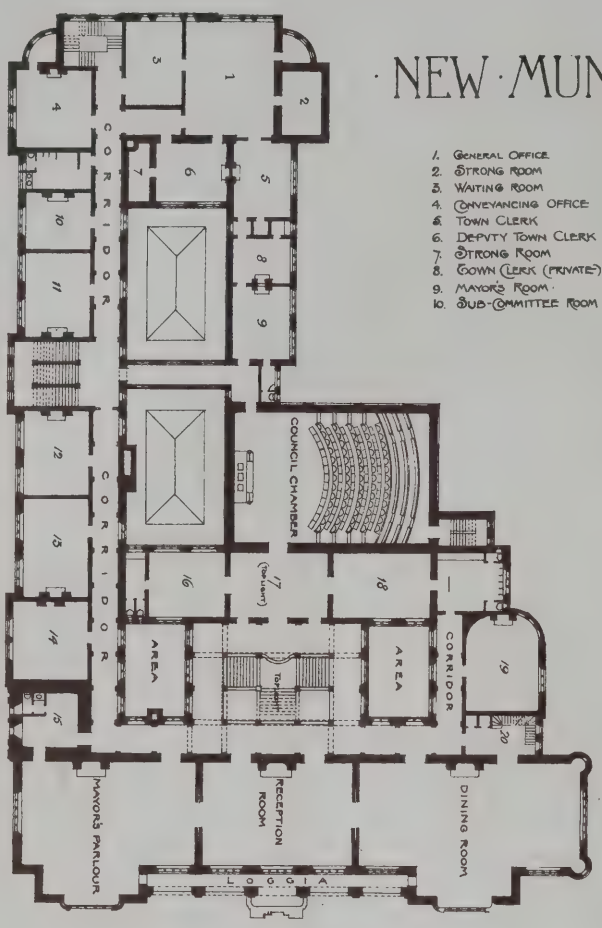
"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

SH· ARCHITECTS·

NEW MUNICIPAL BUILDINGS

SHEFFIEL

1. General Office
2. Strong Room
3. Waiting Room
4. Conveyancing Office
5. Town Clerk
6. Deputy Town Clerk
7. Strong Room
8. Town Clerk (private)
9. Mayor's Room
10. Sub-Committee Room
11. Sub-Committee
12. Do
13. Committee Room
14. Do
15. Robing Room
16. Ladies' Cloak Room
17. Ante Room
18. Gents Cloak Room
19. Committee Room
20. Service Room



FIRST FLOOR PLAN

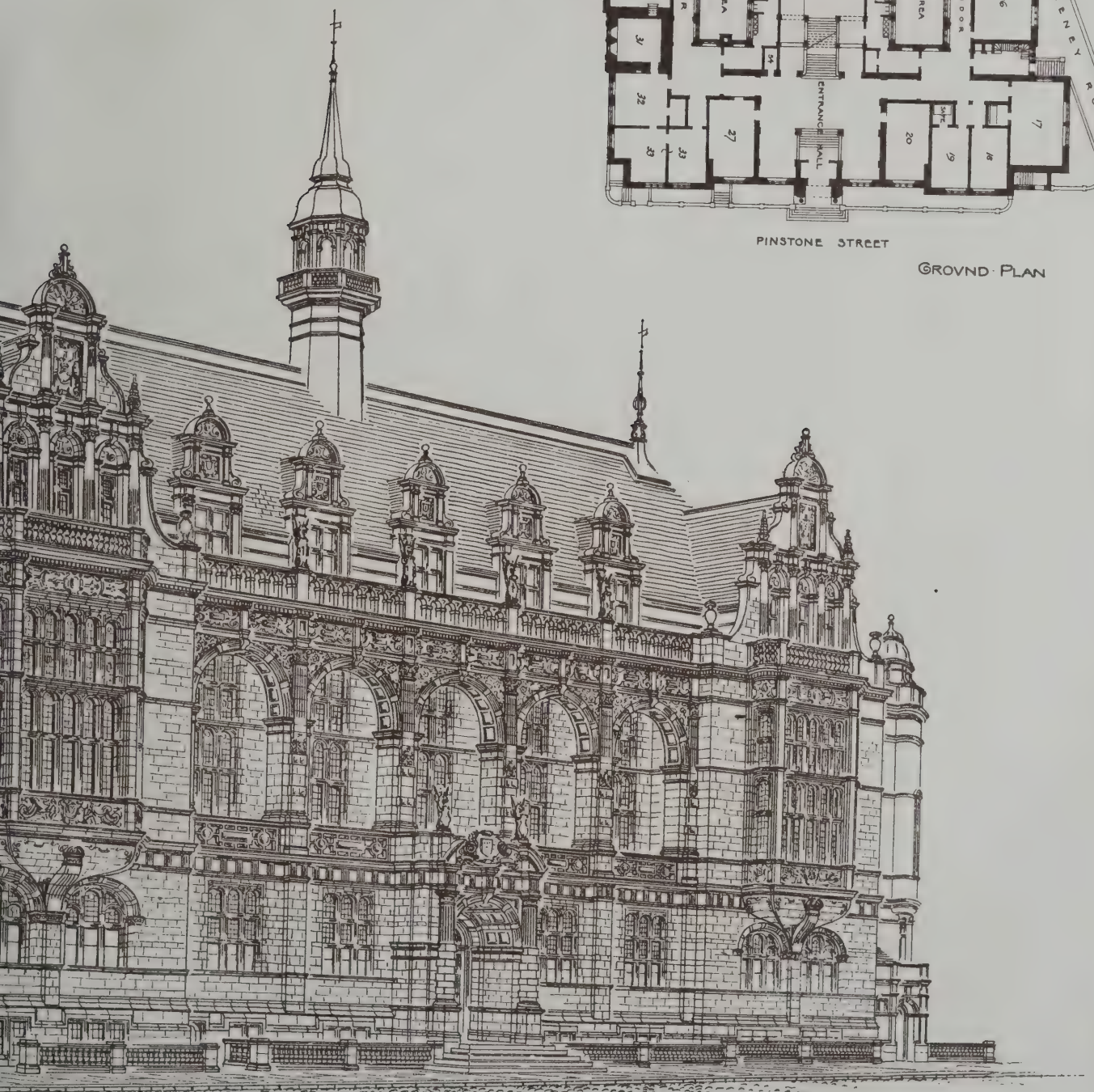


1 Superintendent
2 Show-Rm. for Fittings
3 Distribution Office
4 Collectors
5 Assistant-Manager
6 Telephone
7 Engineer (Private)
8 Engineer & Genl Manager
9 Strong Room
10 Chief Clerk
11 Auditor
12 Accountant
13 Bord' Accountant (Printing)
14 Do Do
15 Spare Office
16 Stock & Mortgage Office
17 Book-Keepers
18 Auditors
19 Deputy-Bord' Accountt
20 Telephone
21 Strong Room
22, 23 Store Rooms
24 Sample Room
25, 26 Store Rooms
27 Building Inspector
28 Enquiry
29 Drawing Room
30 Clerks' Office
31 Plan Room
32 Bord' Surveyor
33 District Surveyor
34 Porter





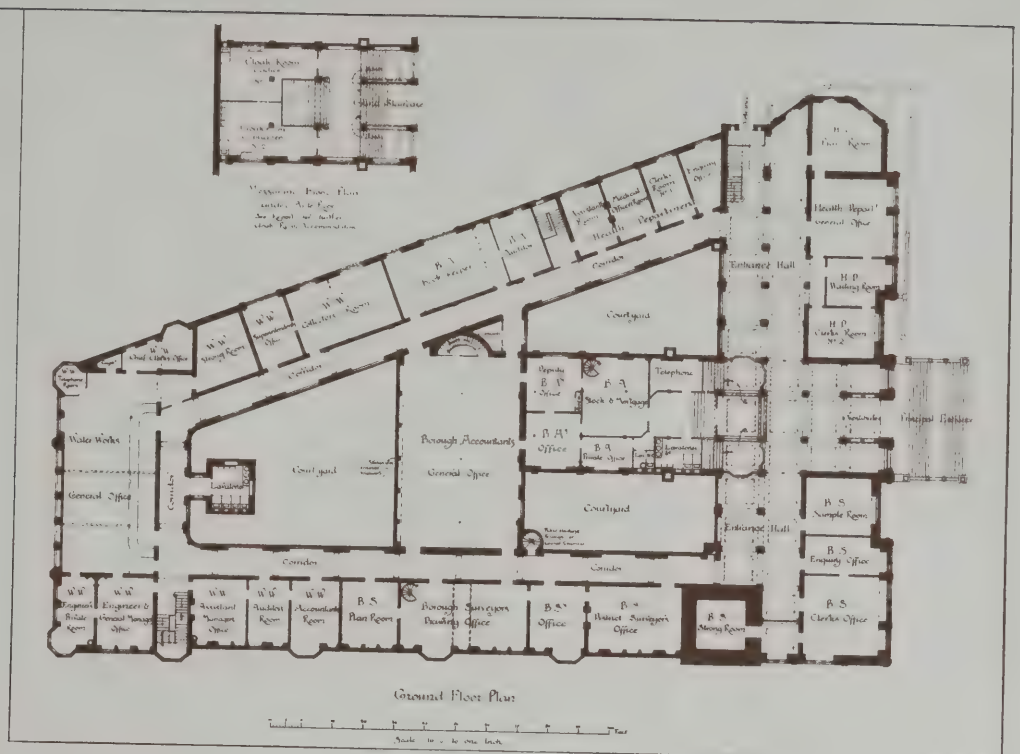
GROVND PLAN



NEW MUNICIPAL BUILDINGS
SHEFFIELD



DESIGN BY F.H



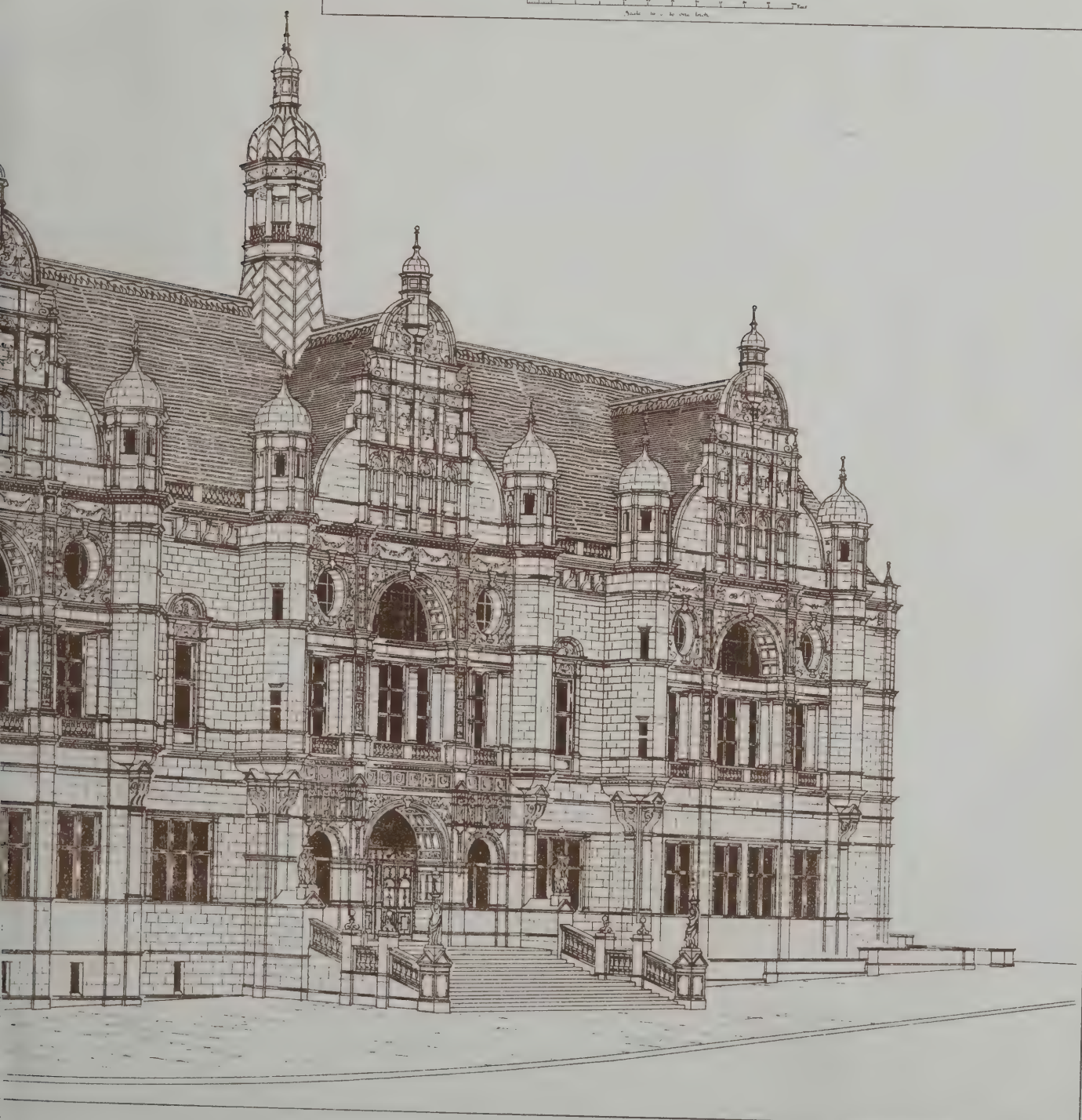
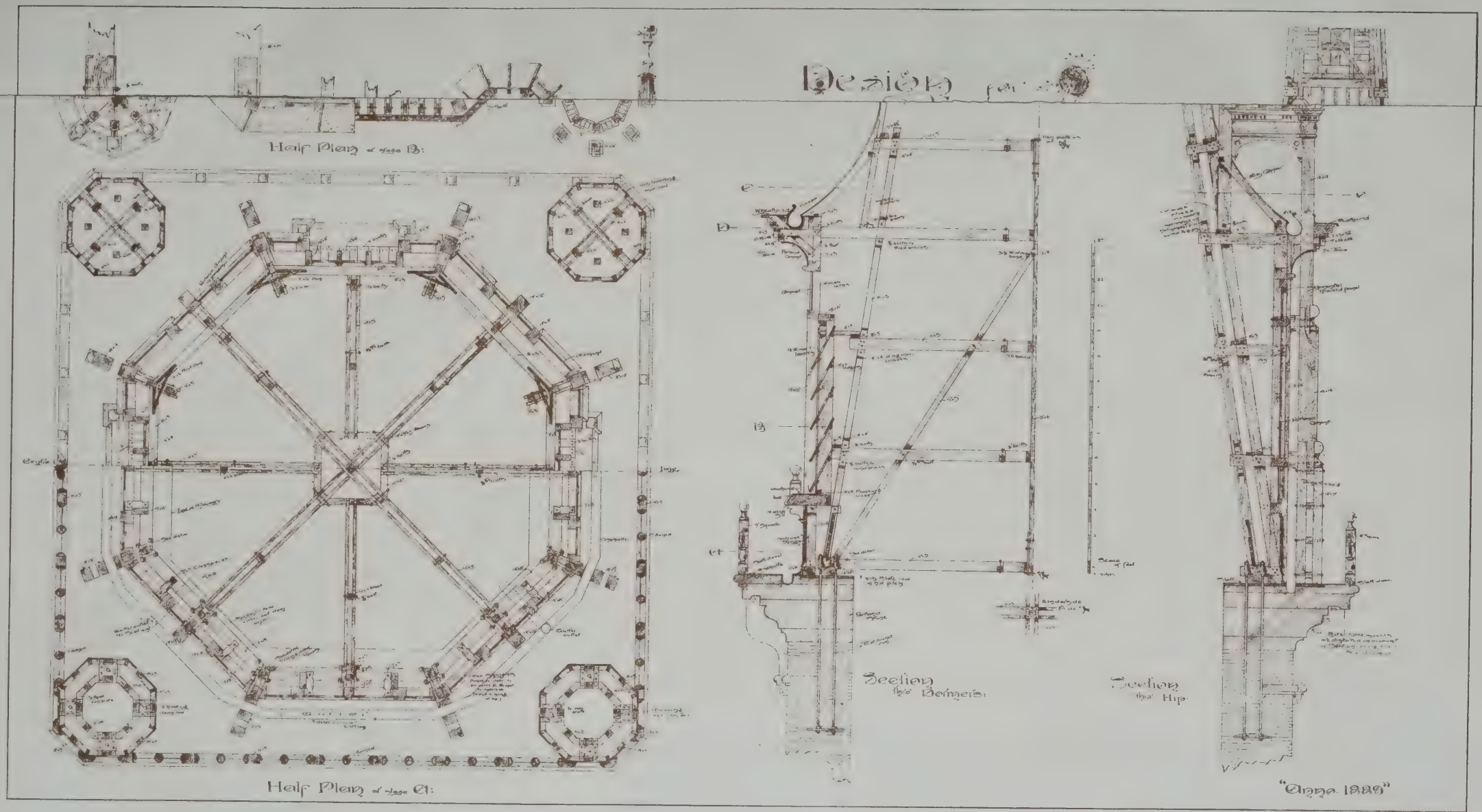


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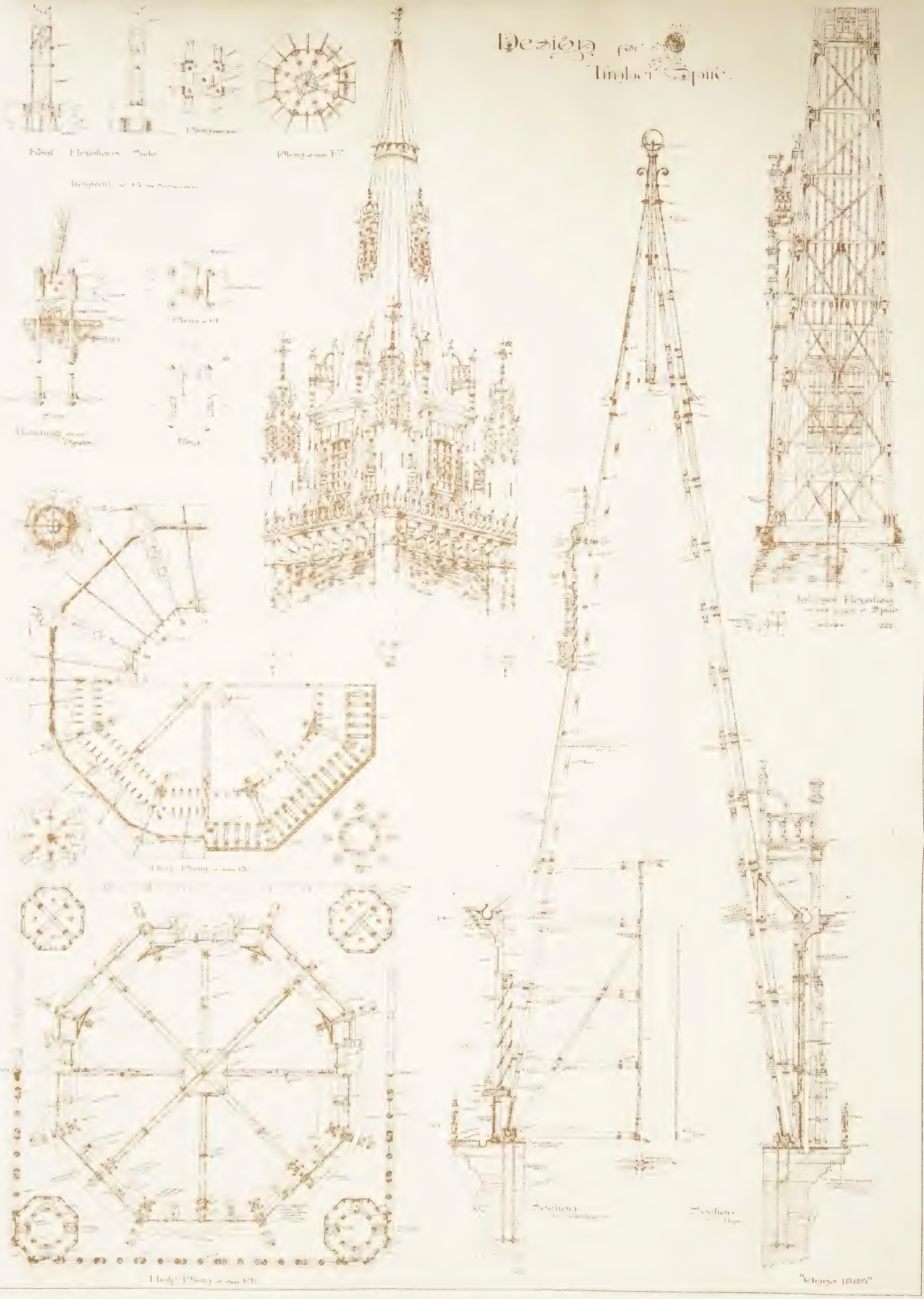


ROYAL INSTITUTE OF BRITISH ARCHITECTS GRISSELL MEDAL

PRIZE DESIGN BY WALTER PERCIVAL

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Designs for a Timber Spire.



Royal Institute of British Architects Grissell Medal.
Prize Design by Walter Percival.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LIX.—No. 1853.
FRIDAY, JULY 11, 1890.

THE DETERIORATION OF BUILDINGS.

ALL our great buildings in London, whatever their architectural merits or pretensions, have to pay the penalty of climatic conditions. Beautiful, bright, and attractive they may be for the first year or two after erection, then their features one by one disappear, the whole building becomes wrapped in a veil of gloomy greyness, till the architectural design is wholly lost to sight. The pall of soot and smoke obscures them so thoroughly that people pass by buildings of quite recent erection as if they were in their senility. Thousands of persons pass the Strand daily who look upon the Law Courts as an old begrimed building. Its outline and detail, which once attracted the eye by their piquancy, have become lost in that yearly thickening coat of carbon which covers the edifice. All the beauty of detail it once possessed has become invisible. Next to it the newly-erected bank, an ornamental addition to the architecture of Fleet-street, is also losing its pristine brightness and sharpness. In the City and Strand the same grimy veil has obliterated the design of many recent buildings which when newly built were pleasant to look at amidst the sombre surroundings. Even on the Embankment the same neutralising dulness has spread over the palatial edifices of stone and brick.

Anything which can be devised by skill to avert this doom of our architecture, anything which the chemist can do, or the manufacturer of new material supply, will, we are certain, be hailed with satisfaction by the public at large and the profession. In an architectural aspect it is a national calamity that our great public buildings should be so quickly destroyed by the very means we take to heat them. The foreigner who has visited Paris, or any of the great Continental capitals, is apt to form a very disparaging idea of our architecture, and to draw comparisons that are peculiarly "odious." Apart, however, from the opinions of foreigners on our architectural ability, the accidental circumstance of the gradual disfigurement of our edifices is very discouraging. We are tempted to extol architecture as one of the Fine Arts, which produces a permanent influence and power over the mind, and in this respect is entitled to rank before music, or even painting and sculpture. It is supposed to produce a lasting pleasure in the human mind; a noble or beautiful edifice is a durable form of expression likened by the poet to a "petrified religion" or to "frozen music." But how can these ideals be realised when our climate and smoke play such havoc with the most costly of our buildings, that in less than half a dozen years after erection they are almost lost to recognition and their finer features quite obliterated? We can imagine an architect whose taste and artistic creed waver, or are inclined to change, not very desirous for the permanence of his designs; and there are many architects who would gladly hide from public view, as well as their own, some of their earlier efforts which appear in their own eyes *passé*, if not atrocious. We believe the late Sir G. Gilbert Scott felt dissatisfied with many of his earlier churches. There are, indeed, very few of our eminent architects who could look complacently on what they had done twenty years ago. In this sense, therefore, the obliterating finger of time is welcome. But the public taste, which less slowly improves, can see beauties in buildings of any age, and amongst architects the qualities of buildings, other than their own work, do not deteriorate with time. All architects, whatever their inclinations, can fully appreciate the beauties of great Classical edifices like St. Paul's, the Bank of England, Somerset House; the Houses of Parliament, though erected early during the Gothic Revival, can be justly admired, so that the diffidence of some architects, their want of confidence in their earlier performances, is a mere personal attitude of modest men, and does not in the least diminish the absolute merit of great works.

The deteriorating agencies that destroy our architecture are chiefly those of the weather, especially moisture and rain, and that due to smoke. We can combat the former only by employing resisting materials, those of a non-porous quality, but the deteriorating agency of smoke appears to defy the resources of scientific methods. The "grits," the most durable of the sandstones as containing nearly all silica with only a very small quantity of carbonate of lime, are excellent stones to resist a smoke-laden atmosphere or the action of weak acids, but they are still liable to be discoloured and seriously affected. The less durable stones we can protect by various processes, or coat them with a thin film of silicate; but this protection, useful for a time to preserve the stone from disintegration, does not preserve the natural colour. The film of sooty particles still adheres and gets thicker till every delicate carving or chiselling is choked up or rendered quite invisible. Driving rain and persistent moisture charged with acids at length assert their influence over the coat of soot, which falls off in flakes, leaving exposed to fresh attacks of soot and moisture a rough surface of white stone. We see the effect of this in the mottled appearance of our great edifices in the City, St. Paul's Cathedral, the Bank, Mansion House, Royal Exchange, and all of Wren's City churches, built for the most part of Portland stone. Close observation of the blackened sides of these buildings reveals fur-like coatings peeling off in places, leaving white and exposed stone surfaces. A kind of thickening of this soot film takes place, choking up the carved ornament. One thing we observe in nearly all these buildings is the unequal distribution of the discolouration or blackening. Some portions appear quite clean and white, though streaked with soot; other portions entirely blackened, as if in deep shadow. We have noticed these effects in the exterior of St. Paul's, where the parapets and upper portions look blanched white, and the entablatures and faces below the sunken parts are quite black. Other examples of this partial discoloration may be found in most of the buildings of stone in the Strand, the river front of Somerset House, and Greenwich Hospital. The cause of this patchy and streaky appearance is due to the effect of wind, rain, and sun. The wind drives the dust and particles of soot against the building, and wherever there is a sheltered place, as under cornices, entablatures, pediments, capitals, and columns, where the sun has no direct influence, the black adheres, the mouldings and carvings are quickly filled up with the particles. When rain accompanies the wind the effect is still more apparent—the south and west sides are more exposed to these agencies. On the other hand, wherever the stone is exposed to the sun and wind there we find a blanched and clean appearance as in the parapets, and columns, dentils, and other prominent surfaces which catch the rays of the sun. On the opposite sides there is a black shadow of dirt. It is impossible to devise means to prevent this effect; the only preventing means is to purify the atmosphere, to reduce our coal fires, and to consume our smoke—unattainable objects under our present system. Wherever wind and rain and sunlight co-exist with a smoke-laden atmosphere, there we shall find this great source of disfigurement. The blackening to which we now refer is not only destructive to the stone, but from an architectural point of view deteriorative in another way. All relief, light and shade, projection and recess, become completely lost to sight. We no longer perceive the design, which appears obliterated or completely dulled; all shadow and lines of relief are lost, and the whole façade appears a darkened blank. Year by year we watch this painful disappearance of the features and details of our new stone buildings. One by one they seem to sink into a deepened shadow from which they never emerge; their bright lines, the carving of capital and frieze and panel sink into a dull black, the windows and columns and pilasters at last disappear from view, or assume one plane of dull flatness. Who, for example, can fail to observe the gradual losing of the points and features of interest in the Law Courts, the architectural detail of which is disappearing in the general blackness? Sir Arthur Blomfield's new Bank adjoining has put on a half-brown, smoky look, its features and bold towers sinking into obscurity. Col. Edis's offices on the opposite side of Fleet-street, and Mr. Gibson's bank—one of terracotta and the other of stone ashlar—have both lost their features, and will soon be reduced to a dead level of blackness. This neutralising effect of smoke is at work everywhere: the buildings on the Embankment, the City of London Schools, the block of buildings in the Temple Gardens, Sion College, and St. Stephen's Clubhouse, at the western end, are mere shadows of what they once were.

The effects of smoke on other materials than stone, brick, and terracotta are almost as discouraging, though perhaps in less marked a degree. The ordinary painted stucco front, perhaps, wears as well as any material; it gets a dirty and drabby colour if not repainted every three or four years, but the black does not cling to it with such tenacity. The rough stucco, rough-cast, especially in fronts in which this material has been scratched or decorated by patterns, as in a front in Fleet-street near Ludgate-circus, assumes a very dirty and anything but pleasing colour, the porous or rough surface of the material imbibing and retaining the smoky particles. Glazed stoneware has had its advocates; but we even find this very washable material becoming dimmed by the film of dust and soot, and scarcely regaining its freshness after a heavy rainfall. Certainly, however, the glazed and semi-glazed materials, and the smooth and vitrified skin of terracotta, as we see it used in the Albert Hall, the Constitutional Club, and the Natural History Museum, appear to retain for a lengthened time their freshness and colour, and acid fumes do not affect them. The general conclusion to be formed from the facts as presented is that a flat treatment of surface, without sinkings or depth of relief is less liable to deterioration. But the architect will be unwilling to forego his lights and shadows and ornamental features, and his alternative is to adopt a use of materials that can withstand the smoke for all prominent and decorative portions of buildings. How to do this is a problem that awaits solution.

COMPETITION DESIGNS FOR THE ENLARGEMENT OF KENSINGTON INFIRMARY.

SEVEN sets of designs for the enlargement of the infirmary of St. Mary Abbott's Workhouse, Kensington, are on view at the above union. We have space only here to describe the two principal designs in their general arrangements. Mr. T. W. Aldwinckle, F.R.I.B.A., has prepared a well-studied set of plans for the proposed additions, and we hear that the guardians, with the

assistance of the assessor, Mr. Thomas Worthington, F.R.I.B.A., of Manchester, have awarded the first premium to that gentleman's design marked A, and the second premium to that sent in by Mr. Delissa Joseph, of Basinghall-street. Mr. Aldwinckle's plans show a practical knowledge of the requirements of workhouse infirmaries. The administrative block is placed in the centre of site, well separated from the patients' department. The old block N is moved, as suggested by the committee, for this purpose. On the south side are three pavilions of sick-wards, these being situated with their axes at right angles to the south boundary, or in the direction of north and south, thus giving a free air space round each pavilion. The author rightly says to place them parallel to the south boundary would be to injuriously overshadow the new pavilions by the backs of houses of Lexham-gardens. The three pavilions give a total accommodation of 312; two of them may be erected without disturbing the existing iron building. The plans show each pavilion 72ft. apart, and containing a ground floor and three floors over. Each ward is 72ft. by 24ft., and contains 24 beds. There is also an isolation ward for four beds. Between the latter and the ward proper are a ward-scullery with windows overlooking both rooms, and a staircase with central lift for patients. At the sides of ward project a bath-room, lavatory, and three w.c.'s, a slop sink, and one w.c. for each isolation ward. These conveniences have intercepting lobbies. Each patient has 864c.ft. provided, or 72ft. super. of floor area and 6ft. of wall space. The isolation wards have 1,000c.ft. per bed, and the wards are 12ft. in height. The walls are specified to be finished in cement, with rounded corners. A polished pitch pine floor is provided for each ward. The wards will be lighted by Wenham or Meteor pendent gas-lamps, warmed by stoves and radiators, and have fresh-air inlets in connection with brick flues 14in. square on each side external wall, there being grated openings at ceiling level which will lead to a shaft with a Boyle's air-pump ventilator on the roof. The administration block is planned on the principle of a central zone. On the east side is the kitchen and offices; on the west side the general stores, to which access is obtained from main entrance—a desirable arrangement. The kitchen has a central open roof and skylight, and is opposite to, or on the same axis as, the general store. The residences of doctor and steward form the north and south sides of the block in front, with matron's and nurses' rooms arranged at the sides with bay windows. The lunatics will be provided for on the ground floor of the first pavilion, facing Marloes-road, the ward to contain 12 beds, a day-room, padded room, attendants' room, &c., are shown in connection. The escape bridges between the lavatories of the pavilions are useful adjuncts in case of fire.

Design B shows the wards planned to run east and west, parallel to the boundary—a less satisfactory arrangement. The elevations sent in are designed to harmonise with the existing brick buildings in a kind of Elizabethan style. The cost of the buildings (coloured red), including lighting and drainage for administrative block and 112 beds, is estimated at £16,750; the cost for the same and 312 beds is £30,450.

Mr. Delissa Joseph's design, awarded second premium, shows an ingenious arrangement of blocks. The pavilions are arranged at right angles to south boundary, and the administrative block is situated parallel to Marloes-road, on the west side of site, the steward's and medical officer's residences being at each end, but isolated from the official departments. The pavilions of wards are well separated, and are connected by corridors, with the required adjuncts. They are well placed for sunlight, and surrounded by sufficient air space. The details appear to be carefully studied, though the want of parallelism in the blocks may be objected to on architectural grounds.

Messrs. Pennington and Bridgen, Adelphi, show a fairly good plan. The administrative block, with kitchen and stores, are placed in the centre separated from ward blocks; on the north side is a pavilion running east and west, having on the ground floor a ward for 12 lunatics, 37 by 24, stores at each end, and nurses', bath, and padded rooms at the west end of block. This pavilion is connected by a corridor 10ft. wide with the administrative block. The patients' entrance is at west end of pavilion. On the south side of administration department is a long pavilion divided into three wards, one for 30 beds (90 by 24) at east end, a centre ward for 24 beds (74 by 24), and at west end a ward for 16 beds; with nurse, bath-room, and stairs between each. On the first floor, the lunatic pavilion has a ward for 28 beds, and a day-room at west end for four beds. A concrete flat over corridor connects it with the administrative block, where matron's and nurses' bedrooms, and operation-room are located. The south pavilion has wards for 30, 28, and 16 beds respectively. The third and fourth floors are similarly arranged. The elevations are proposed to be of brick, carrying out the style of the old buildings. The estimated cost is £15,500. Mr. Francis J. Smith, of Winchester House, Old Broad-street, shows two pavilions at right angles to south boundary, each for 24 beds, joined by a range of buildings parallel thereto; the isolation wards are between the pavilions. The plans are drawn to a small scale. Mr. William Bradford has a design having three pavilions running east and west, connected at the west end by a long block of administrative offices towards Marloes-road; a long corridor in the rear of block gives access to each pavilion. Mr. Henry W. Hunt has a plan showing a large administrative block connected by corridor to a long pavilion running east and west. Wards for 36 beds are provided at the east end, and wards for 26 beds at the west end, with isolation wards, &c., between. Messrs. Newman and Newman have a similar distribution or plan; the lunatic pavilion being a short block on the north side of the administrative block. Connecting corridors join the pavilions and official department.

NOTES ON BUILDING PRICES.—III.

By JOHN LEANING.

LABOUR.

ONE of the factors in the calculation of values is the cost of labour, of which, in its various phases, only long experience can judge wisely; but even the inexperienced may be certain that sanguine expectation of the result of a day's work will always be disappointed. It is generally admitted that men do much less work per day than they did thirty years ago, when their wages were much lower. Although the trades-unions may be congratulated upon much of their past work, which has notably improved the condition of the workman, their maxim "A fair day's work for a fair day's wage," like Talleyrand's "Point du zèle, monsieur," is, in the opinion of all but mechanics, a grave mistake. By it the capable and energetic workmen is reduced to the level of the comparatively lazy; but, nevertheless, the testimony from all good judges to the capability of the British workman is no mean tribute to his powers. The lowest rate of wages is that in the schedules of the Government departments, and as these are tendered upon at a discount of 10 per cent. and upwards, it may be inferred that the labour supplied at such prices cannot be of the highest quality, and when it is remembered that these rates cover establishment charges for which these schedules do not provide by any special clause, the uninitiated are lost in admiration of the ingenuity of the builder, who makes a profit under such inclement conditions. The truth is, however, that there are a number of men content to work at low wages (many of them worth no more) in consideration of the comparative permanence of the employment, and when the periodical contract for a district changes hands, they follow it to the new contractor. As a general rule, the building operative works 52½ hours in summer, and 47 in winter. In London wages are as follows:—

	Per hour.	Rate Commonly Allowed.
Excavator	0s. 6¼d.	0s. 7½d.
Labourer	0 5¾	0 7
Scaffolder	0 6¼	0 7½
Bricklayer	0 9	0 10½
(Do. when on gauged work 10d., difference seldom claimed or allowed in building accounts.)		
Mason	0 9	0 10½
Fixer	0 9½	0 11
Carpenter	0 9	0 10½
Joiner	0 9	0 10½
Smith	0 9	0 10½
Plasterer	0 9	0 10½
Painter and glazier	0 8½	0 10½
Plumber	0 10	1 0
Do. labourer	0 6¼	0 7½

Watchman, 21s. to 25s. per week; foreman—various—average about 60s. per week.

In some other parts of the country the wages paid are as follows:—

	Liverpool.	Fareham.	Colchester.
Excavator	0 5½d.	0s. 5d.	0s. 5d.
Bricklayer	0 8	0 7	0 6
Labourer	0 5	0 4½	0 4
Mason	0 8½	0 8	0 7
Tiler and Slater	0 9	0 7½	0 6
Carpenter	—	0 7	0 6
Joiner	0 8	0 7	0 6
Plasterer	0 8	0 9	0 7
Boy	—	0 2½	0 2
Smith	0 8	0 7	0 6
Plumber	0 8	0 9	0 9
Gasfitter	0 8	0 8	0 8
Glazier	0 7½	0 6	0 5½
Painter	0 7¼	0 6	0 5½
Horse, cart, and man per day	9 0	9 0	8 0
Two horses, cart, and man do.	14 0	13 0	12 0

There are many men who work at lower rates than the foregoing; but this is a matter with which the surveyor cannot deal: he must adopt the current rates—the consideration is not important, for wages below the market rates always involve poor services. Employers pay workmen's fares when the work is four miles from the shop, or pay for lodgings. Workmen sent from London to the country at the request of employers receive London rates, with an additional allowance for lodgings; the railway fare is paid from London to the works, and, if the workman is discharged by the employer, back to London. Very good workmen are, in addition to the foregoing, paid 1s. per day "country allowance" as it is called. Engineers, like Maudslays, pay 2s. per day. In London overtime is paid for as follows:—For the first hour after usual time, 1d. extra; from the end of the first extra hour to 8 p.m. at the rate of 2d. extra per hour; after these hours, at the rate of time and a half. The extra time on Saturdays at the rate of time and a quarter up to five o'clock; and after that time at the rate of time and a half. In "tide work" six hours is usually paid for as nine hours, and if more than six hours is available in a similar proportion; the overtime rate applies to this time also. Working in water is paid at the rate of one-third more than ordinary pay, and the contractor finds water-boots. The War Office schedules provide as follows:—Whenever it may be necessary to employ workmen by the day between the hours of 6 p.m. and 12 p.m., or on Sundays between 6 a.m. and 6 p.m., one-half the contract rates per day will be allowed in addition for such work, and when employed between the hours of 12 p.m. and 6 a.m., or on Sundays between 6 p.m. and 6 a.m., double the contract rates per day will be allowed for such work. In like manner, whenever workmen are ordered to be employed on measured work at tide work, or during those hours of the night before specified or on Sundays, the extra rates for the labour only will be allowed in addition, provided in each case the contractor's claim is supported by a written order signed by the superintending officer, and the work is not specifically provided for in the schedule. In dealing with labour, whether in estimating or adjustment of accounts, the question arises as to the proportion of labourer's time to be allowed to each mechanic. Day accounts almost invariably demand the same

amount of time on a particular item of work for labourer and mechanic, and it requires much judgment and experience of working processes to deal justly with such claims. Observation of the progress of an average building will show a varying proportion at its successive stages; taking an average for the whole period, three labourers to five mechanics is a reasonably close approximation to the truth. The necessities of attendance are various; for works in which there is lifting and supporting, the labourer's constant presence is necessary. In others the labourer takes to the place sufficient material for the piece of work, and goes to it no more, except to remove the unused material. In building brickwork, when the scaffold can be supplied from the ground, one labourer can supply two bricklayers. As the height increases more labourers will be required; but one labourer can generally supply one bricklayer—the exceptions are rare. When men are doing gauged work, the progress is slow, and requires very little attendance. A mason fixing stonework will generally require a labourer in constant attendance, and when the stones are heavy two. The mason working at a banker only requires labourers' attendance for bringing the stone before working, and removing it afterwards. A slater generally requires constant attendance of a labourer, but often contents himself with a boy. The carpenter's work—roofs, floors, partitions, &c.—generally requires one labourer to three carpenters, and if the timbers are heavy, one labourer to two carpenters. One labourer will attend to two joiners as a rule; one labourer will serve two plasterers; one labourer will serve two plumbers, often a boy will do it. When considering charges for time in a day account, or in calculating prospective expenditure of time, observe that a workman often has to be specially brought from the contractor's yard to do a certain work, and that the time for his journey should, in justice, be allowed. Capable labourers are often set to pull down brickwork for an alteration by the bricklayer, and bricklayer's time charged for it. Labourers often limewhite and paint, and so save the time of more expensive men. Doubts are not seldom entertained by surveyors and others on charges for time, and their conclusions that it is overcharged are frequently correct; but mere moral certainty is not legal proof—it can only be a matter of opinion, and the *opinions* of experts have not such weight as might be desired. On any disputed point dependent upon opinion, evidence of equal force and diametrically opposed may be obtained if only trouble enough be taken to procure it. Contentions as to time are usually met by the builder's production of his books, of which the day accounts are or should be exact copies. The only test of a day account is comparison with the result of a measurement and valuation at current rates; but this is often fallacious. Many surveyors refuse altogether to criticise time charged in day accounts. They maintain that if absolute accuracy and proof is required, the work must be carefully observed by a clerk of works, or by the architect himself. The latter is, in most cases, impossible.

CONSTANTS OF LABOUR.

Constants are the most convenient form for the preservation and application of observation of the results of labour. When their importance is fully recognised we may hope to see an extended and complete series which will to a great extent supersede the current price-books. In the words of Gwilt, it is manifest that if the average time of executing each species of work were known, no difficulty could exist in fixing uniform rates of charge for it. In Gauthey's "Traité de la Construction des Ponts," 1809, there are constants in all trades. Rankine gives some of these in his manual of civil engineering, and Cresy in his "Encyclopædia of Engineering" translates them complete. They appear, so far as they go, to have been very carefully considered, but the changed circumstances of the artificers' work, the lapse of time, difference of nationality, and the inferior quality of the French workman (forcibly illustrated by Thomas Brassey's experience during his construction of French railways) detract considerably from their value, and they are, consequently, hardly worth the trouble of translation. Other French engineers, Geniey, Claudel, and others have pursued the study later, but only to a limited extent. Peter Nicholson, in his "Dictionary of Architecture," gives a series for the trades of carpenter and joiner, characterised by the care which most of his work evinces. Gwilt, in his "Encyclopædia of Architecture" repeats them, and adds a few in the Masons trade. Dobson, in his "Guide to Measuring and Valuing Artificers' Work," gives constants in all trades. Rankine gives a few in his "Useful Rules and Tables for Engineers." For Mr. Hurst, in his "Architectural Surveyors' Hand-Book," has been reserved the distinction of presenting a series in all trades, which are admitted (by everyone qualified to judge) to be by far the most valuable contribution of recent years to the literature of estimating. The careful thought and long experience which they embody will be apparent to all who may have occasion to use them. Dobson's constants are described as including profit, and he does not say what the rate of profit is—a return to the worst characteristic of the price-books, and an apparent failure to grasp their essential idea, the recording of cost. The mode of application of constants is so well known that a few words will be sufficient. A constant represents in days and decimal parts of a day, the time which a certain unit of work, as a yard, a foot, a rod, will require for its performance; the amount of the workman's wages for ten hours being multiplied by such constant, the result will be the cost of the unit as a yard, foot, or rod. An example of this is as follows:—

The wages for 10 hours' work being 6s. 8d. = ...	·333 of £
Constant for 1½ four-panel square door, including hanging	·077 of a day.
Decimal of £1.....	·025641 = 6d. per ft.

If it should be necessary to analyse a constant to discover quantity of work per day of ten hours, to which it is equivalent, the division of one day by the constant will produce that result. The following is an instance:—

	Days of a Navvy.
Excavating vegetable soil per cubic yard..	·045

·045)1·00(22 yards
90
100
90
10

The student of prices will find it instructive to collect all the constants of labour he can find, arranging them in a book in parallel columns, for comparison, thus:—

Excavate vegetable soil per cubic yard..	Rankine	Hurst	Dobson
	·05	·045	·088

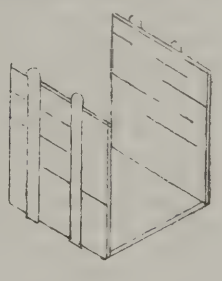
It is also good practice to put any acquired information into constant form. Thus, three men excavate 45 cubic yards of clay of a certain character in ten hours:—

	Yds.	Day.	Constant.
45yds ÷ 3 men = 15yds per man	15)1·00	(·066	
	90		
	100		
	90		
	10		

The observation of one man's work is of little use in an inquiry of this kind. The industry and capability of men varies so much that constants must be based upon the average results of the labour of a number of men. The value of the older existing constants like Nicholson's, which are repeated in Gwilt's "Encyclopædia," are affected by the smaller quantity of work done in an hour by a man now than at the time they were produced.

ECONOMY OF LABOUR.

In a large work various labour-saving expedients may be adopted, which, in a smaller one, would be unreasonable. In such as these the advantages of competition lie with those contractors who are constantly engaged upon great works, with the requisite plant for the purpose. The use of overhead travellers, steam-engines, and cranes long enough to lift material from the cart or waggon and deliver it directly on the part of building where it is required, are obvious advantages. In London large cranes are now sometimes worked by hydraulic machinery connected with the main of the Hydraulic Power Company. In providing for these, it will be necessary to design the staging and its supports, charging it and the crane as use and waste. The hydraulic machinery may be hired from the Hydraulic Machinery Company, as in the next case of requiring use of crane, the site may not be near the line of hydraulic main, and may have to be worked by a steam-engine. A derrick crane, with 45ft. jib to lift 3 tons, with steam engine and boiler, weighs about 9 tons, and costs about £250. The fuel required, when in constant work, would be about 10 sacks of coke in 12 hours. A hand derrick crane of 20ft. radius and a jib 25ft. in length, to lift a ton, costs about £35; such as these are frequently used for suspending large stones in process of setting. As the staging for these is often fixed at a considerable height above the ground, timbers for the purpose of sufficient length in one piece are not obtainable; 9in. by 3in. deals; 11in. by 3in., or 11in. by 4in. planks, or flitches of timber bolted together and breaking joint are used instead. Outlay on basketing and wheeling of earth is saved by the use of iron buckets holding half-a-yard or a yard of earth, which can be hooked on to the crane raised and lowered into the cart in the street. Whether the bucket shall be tipped into the cart or carried to its destination for convenience of using a crane there, will depend upon circumstances, but generally the cart can be *tipped* at the end of its journey. Bricks also raised in a similar manner (by cranes) from the hold of a barge in wooden frames (as sketch) to fit a cart or van, each frame holding



about 280 bricks, may be carried three at a time by a two-horse van. They can then, without disturbance on their arrival, be hooked on to another crane and deposited close to the bricklayers. Bricks, when already deposited on the site, are rarely carried up ladders by labourers, some form of builder's hoist being generally adopted for all works, except the smallest; a block and fall or a rubbish-wheel and fall is often used for raising material. Worked stone is often packed in a flat, wooden tray at the builder's yard, laid on a truck which can be hooked on to the crane at the building and raised to its position. For the raising and conveyance of large stones from one part of a building to another overhead travellers can generally be economically used. In all these cases the fewer times the material is handled the greater the saving. But although the saving of labour in such cases is great, it is not so much as might be supposed, the expense of engines and cranes and their depreciation, and the conveyance to and from the building, erection and removal of machinery, staging, &c., is a considerable drawback. Moreover, the supports of travellers, gantries, &c., interfere with the straightforward progress of walls to an extent which architects will not always tolerate. For the comparison of machinery with manual labour see sections Mason and Carpenter. The exact apportionment of the cost of the work of steam-engines and machines to the particular items of work they contribute to produce, and so to find their share in prime cost is impossible; but a useful approximation may be arrived at. Probably the best way is to add a uniform percentage upon the remainder of the cost of every article on which machinery has been used, made up as follows:—

Per cent. per annum on the cost of engines and machines for interest on outlay	£	s.	d.
Do., for depreciation.....			
Total annual cost of fuel			
Total annual cost of water			
Total annual cost of engineer (for driving and repairs)			
Estimated annual rental of engine and boiler houses, and other buildings necessitated by machinery.....			

The comparison of an amount thus arrived at with a separate account of cost otherwise incurred upon all work for which machinery has been used, will show a proportion which may be

adopted for the calculation of a percentage to be added to every item according to its value. The calculation will be still more useful if a separate account be kept for each trade in which machinery is used. Machinery may be adapted by a skilful machinist to the production of a very astonishing variety of work, but cases have been known of enthusiastic manipulators who have spent so much time upon such modifications that in the end the work has cost more than twice as much as it would have done by common methods.

(To be continued.)

CONTEMPORARY BRITISH ARCHITECTS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

CONTINUING our gallery of portraits of practising British architects, we print to-day the sixteenth sheet. Mr. T. S. Robertson, of Dundee, is the President of the Institute of Architectural Science and Art in that town. He has been in practice for thirty years, and has carried out many works. We may enumerate among the more recent of his buildings St. Margaret's Church, Arbroath; St. Stephen's and Beach Churches, Broughty Ferry. Mr. Robertson was among the first to use malleable iron beams for commercial buildings in Dundee, and he has organised the annual exhibition of paintings there as joint Convener of the Hanging Committee. Other buildings of his which occur to be mentioned are:—Auchmithie parish church, the restoration of the 15th-century church of Foulis Easter, schools and hall at Morpeth, and Queen's Jubilee Memorial Arch at the Public Park at Broughty Ferry. Mr. Robertson's portrait is from the studio of Messrs. James Valentine and Sons, Dundee.

Mr. Henry Perkin, the President of the Leeds and Yorkshire Architectural Society for 1889-90, is the son of the late William Perkin, F.R.I.B.A., of Leeds, who had a large and varied practice in the county of York for upwards of 40 years, and with whom the subject of this notice was in partnership. Since 1877 Mr. George Bertram Bulmer has been the co adjutor of Henry Perkin, and they now practise under the name of Perkin and Bulmer. Amongst the works executed are the following:—The churches of Aldbrough, Hull; Allerton, Bywater; Barton-le-street, Hunslet Moor, Leeds; Woodlesford, and St. Cuthbert's, Leeds; the Mission Church at Whitwood Mere; a mission room, St. Mark's, Leeds, and another like work at Kirkstall. They restored Pool Church; the enlargement of St. Barnabas Church, Leeds, they did, and Clokaenog, North Wales. Among their school buildings are those at Altofts, Barlby, Arthington, Kippax, Bowers Row, Swilleigh; with more at Allerton, Pickhil, Thirsk; Tarwell, Peterborough; St. Cuthbert's Parochial Buildings, Leeds, were built from this firm's designs, and they enlarged St. Barnabas schools, besides building schools at Westerdale, Yorks; Sheriff Hutton, the Primrose Hill Board School, Leeds, those at Gledhow, Leeds, and Huggate Schools, also the schools at St. Simon's, Leeds. They designed vicarages for St. Peter's, Hunslet Moor, Leeds; Allerton, Bywater; Alltofts, Normanton, and Whitwood Mere. Their chief public buildings are the new Police Courts at South Shields, Pontefract Town Hall, Victoria Hall, Burley-in-Wharfedale, Leeds and County Bank, Pontefract; National Provincial Bank of England, Whitby; Yorkshire Penny Bank, Halifax; Penny Bank and Albany Hotel, Sheffield; the Constitutional Club, Burley-in-Wharfedale; among their residences are Colne Hall, Lancashire; Thornhurst, Headingley; Residence, Whitby; Hawkhills, Gledhow; Villas, Headingley and Garforth. Mr. Perkin is surveyor to two building societies. His portrait is by Mr. T. B. Nettleton, of Leeds.

Mr. E. W. Mountford, F.R.I.B.A., the architect for the New Sheffield Municipal Buildings, has, amongst other works, built a lecture hall and class-rooms at Wandsworth; Church of St. Paul and vicarage, Forest-hill; chapels and schools, Elm-road, Beckenham; Northcote-road, Battersea; and at Barnes; a mission hall and class-rooms at Earlsfield; St. Andrew's Church in the same place; a lecture hall and class-rooms at Cambridge; a hospital at Stratford-on-Avon, another at Whitchurch, Salop; at Stonelands, Sussex, he erected a house, entrance lodge, stables, and farm buildings; enlarged "Earlsfield," Wandsworth; and built houses at Shipston-on-Stour, Buxton; Earlsfield; others at Wandsworth, Guildford, East Plumstead, &c. His public library at Battersea was won in competition, and he has put up warehouses, &c., at Bow. He was first in a competition for a church at Woking, second for a hospital at Burnley, second for the Chelsea Library, and among the first six competitors for the Lincoln School of Art; Training College at Norwich, Cottage Hospital at Newbury, &c. Mr. Mountford was born in September, 1855, articled to Messrs. Habershon and Pite, of Bloomsbury-square, September, 1871; and then became clerk of works at St. Stephen's, Hounslow. He subsequently worked in the offices of Messrs. George Elkington and Son and Messrs. Giles and Gough. He commenced private practice October, 1880, was librarian at the A.A. 1887-8-9, elected A.R.I.B.A. in 1881, and F.R.I.B.A. in 1890. His portrait was done by Mr. J. A. Draycott, of Birmingham.

Mr. S. Flint Clarkson, F.R.I.B.A., was for four years (1872 to 1876) honorary secretary of the Architectural Association, was vice-president in 1876-77, and president during the session of 1879-80. He was brought up in the school of Sir Charles Barry, having been for a number of years with Mr. John Gibson, the architect of the National Provincial Bank of England, who received the Royal Gold Medal this year. Since 1867 he has carried on architectural practice from London in conjunction with his partner, Mr. John Clarkson, having also offices at Poplar and St. Alban's. Mr. Flint Clarkson is district surveyor under the Metropolitan Building Act for North Chelsea. He is a member of the Board of Examiners in Architecture. His portrait was taken for our series by Mr. J. Barnard, of St. Alban's.

Mr. Edward John Tarver, F.S.A., F.R.I.B.A., was educated at Eton College and Bruce Castle. He was articled to the late Mr. Benjamin Ferrey, F.S.A., March, 1858, took students' prizes at R.I.B.A. and A.A., 1861-2, was editor of the A.A. Sketch-Book at its starting in 1867, and President of the Architectural Association in 1874. He was the first paid lecturer at the A.A. on the "History of Architecture" for six years from 1881; he was one of the six selected architects out of forty-three candidates for the post of superintending architect to the Metropolitan Board of Work in 1887; he is certified competent to act as district surveyor, and has acted as an extra examiner at the R.I.B.A. associates' examination. He delineated Sandringham Church by command of H.R.H. the Crown Princess (the Empress Frederick) for reproduction at Potsdam in 1865; amongst buildings of various kinds, including churches, town and country mansions and other houses, schools, &c., he has carried out the following:—Church of All Souls', Harlesden (illustrated "B.N."), begun in 1878, completed Feb., 1890; parish church of St. Peter, Tyringham, memorial to the late Mr. W. B. Tyringham; Hooton Chapel, for Sir John Essington, Bart.; Willesden parish church, much enlarged; Mausoleum, Rossmore, for Lady Rossmore; repairs and additions to several old churches, many in Norfolk and Suffolk. The first house built by him, being handed over to him by his master, Mr. Ferrey, was Down Amney Parsonage, for the late Rev. Greville Phillimore, in 1863; Broadstairs Rectory, one of the earliest ventures in the modern style now generally adopted, in 1870; many buildings at Wadhurst Park, the seat of Mr. C. de Murrieta, including the mansion in 1872 (illustrated "B.N."), considerably enlarged in 1881, since which time he has carried out other works on the estate, one recently finished; also additions to, and rebuilding after the fire, No. 11, Kensington Palace Gardens, for Mr. de Murrieta's brother, the Marquis de Santurce; hunting-box at Ardennes, for the Duchess of Ossuna; alterations and additions at Parkfield, Hallow, for Mr. C. W. Lea, 1877 and 1886; additions at Colthurst, for the late Sir John Holker, attorney-general; has also been successful in curing obstinate down-draughts in St. Michael and All Angels' Church, Paddington; and has been employed in cases of party-walls, rights of light and air, &c. The photograph reproduced is by Mr. W. H. D. Pym, of Streatham.

Mr. Walter Green Penty, F.R.I.B.A., the President of the York Architectural Association, has designed and carried out several important buildings in York and neighbourhood. Of public buildings, his principal works are the York Institute of Art, Science, and Literature, the foundation-stone of which was laid by H.R.H. the Prince of Wales when visiting the Royal Agricultural Show at York in 1883, and the York Liberal Club, opened in 1888. He is the architect of several residences, amongst which may be mentioned "Burnholme," near York, and "Brooklands," Selby, Yorks. Several of the new blocks of business premises erected in the city of York during recent years are from his designs, and he has also been the architect of some large warehouses, flour-mills, and other buildings of a constructional character on the banks of the rivers Ouse and Foss; a flour-mill, silo-house, &c., which, when completed, will be probably the most complete in the United Kingdom, is now in progress from his designs. He has also built a number of homesteads in the North and East Ridings of Yorkshire. On the formation of the York Architectural Association in 1882 he was chosen the first president, and was again elected for a second period of two years in 1888. In 1883 he was elected on the City Council, but retired in the following year. He has also held the appointment of surveyor to the York Union Rural Sanitary Authority since 1876. He has taken a great interest in the York Architectural Association, and has also lectured on architectural and artistic subjects before the members of the York Institute of Art, Science, and Literature, and the York Arts Guild. His portrait is by Mr. W. Eskett, of York.

THE LATE SIR EDWIN CHADWICK.

FULL of years and honours, Sir Edwin Chadwick, K.C.B., the father of modern sanitary science, died on Saturday at his residence, Park Cottage, East Sheen, in his 91st year. Educated as a barrister, Edwin Chadwick early devoted himself to the study of the causes of zymotic diseases, and the means by which the losses of health and life resulting therefrom could be diminished. Chadwick then preached to a generation with ears that were deaf and eyes that were blind to the startling facts he brought before them; but though his views on cleanliness were rudely ridiculed, Jeremy Bentham left him a small legacy and part of his library. Earl Grey nominated Chadwick in 1833 as assistant commissioner to inquire into the operation of the Poor Laws of England and Wales, and the outcome of his searching investigations and elaborate report was the passing of the Poor Law Act. Mr. Chadwick was appointed secretary to the Poor Law Board, and during more than twenty years his labours in connection with it and the General Board of Health were untiring. Factory labour, half-time, and instruction occupied some of his attention. In 1338 he obtained a special commission of inquiry into the prevention of disease and the improvement of dwellings in England and Wales, and in 1843 one on interments in towns, which laid the foundation for subsequent legislation. In 1848, Mr. Chadwick was appointed a Commissioner of the General Board of Health, from which he retired nearly six years later on a well-deserved pension of £1,000. His services to the country were only tardily and grudgingly acknowledged. Created a C.B. in 1848, he was only a twelvemonth since advanced to the rank of knight in the same order. His labours have been indefatigable in all matters relating to the health and welfare of the people, and were continued to the last. His volume on "The Health of Nations," of which an abridged edition, revised by Dr. W. B. Richardson, has just been published, is a standard work on the subject of the benefits conferred on the people by attention to hygienic rules. Chadwick was an earnest worker in the Sanitary Institute from its formation, and was half-a-dozen years president of the newly-organised Association of Public Sanitary Inspectors, and his address to that body, read in his absence through enfeebled health, at the Annual Congress at Leamington in October last, was as fresh and vigorous in style as any of his earlier writings. His funeral took place on Wednesday at Mortlake Cemetery, and was largely attended.

A plan, prepared by Messrs. Morris and Hunter, Ayr, for the pedestal of the Ayr Burns statue, has been adopted by the Burns Committee. The pedestal is 12ft. high, and is to be of grey granite, with spaces for four bronze panels. On one side will be carved a thistle, and on the other sides flowers, or other devices, emblematic of England, Ireland, and the colonies.

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ILLUSTRATIONS.

CONTEMPORARY BRITISH ARCHITECTS.—DESIGNS FOR THE NEW MUNICIPAL BUILDINGS, SHEFFIELD.—TWO CROSIERS DESIGNED BY J. D. SEDDING.—MESSRS. HUDSON BROS.' NEW PREMISES, LUDGATE HILL.—SKETCHES FROM THE TIVOLI.—OLD ARMOUR AND FURNITURE FROM THE CASTLE OF NUREMBERG.

Our Illustrations.

CONTEMPORARY BRITISH ARCHITECTS.

(See description on p. 40.)

NEW MUNICIPAL BUILDINGS, SHEFFIELD.

Following up the views already given in our pages of three of the six final designs, and including the selected one, we print to-day two sheets of geometrical drawings which we select as being among the best in the competition. They represent Mr. F. H. Tulloch's design, already described by us last week. Illustrations of the three remaining designs will follow in due sequence.

TWO CROSIERS.

The episcopal staff of the Diocese of Bath and Wells, and that for the Bishop of Connecticut, are from the designs of Mr. J. D. Sedding. The basis of the crook in each case is of ivory, mounted with silver-gilt enrichments and figures, the ornaments being set in parts with jewels. The drawings given herewith show the arrangements adopted in each case, the illustrations being reproduced from the author's working cartoons.

NEW BUILDINGS, LUDGATE HILL, LONDON.

These buildings have just been erected for Messrs. Hudson Bros., provision merchants, as a central depot. The lower part of the front to Ludgate-hill is of grey and red granite supplied by Messrs. Whitehead and Sons, of Aberdeen, and the portion above the granite is faced with Bracknell red bricks and Mansfield stone dressings. There is a large basement with vault under pavement, the walls of which are lined with white glazed bricks. The first and second floors are to be let as chambers or offices, and the third floor will be occupied by Messrs. Hudson Bros. There will be communication between this floor and the ground floor by means of a private staircase. The building is being carried out by Mr. W. Shepherd, builder, of Bermondsey, from the designs and under the superintendence of Messrs. J. W. and R. F. Beaumont, architects, of 73, Queen Victoria-street, London, and No. 10, St. James's-square, Manchester. Mr. V. Hibbins is acting as clerk of works.

SKETCHES FROM THE "TIVOLI."

The "Tivoli" Theatre and Restaurant, which has just been opened to the public, is erected on the site of the old Tivoli in the Strand, and has cost upwards of £260,000 to build and decorate. The plans were originally made by Mr. W. Emden, and have been carried out by Mr. C. J. Phipps, F.S.A. The grand entrance is Indian, or, more strictly speaking, Moresque in character. The wall decoration consists of a series of arches springing from slender columns, the spaces between being filled with a close Oriental diaper in fibrous plaster. The colouring is three shades of blue, ivory, and gold; the dado is formed of hand-painted tiles, painted in shades of blue to match the general wall decoration. The principal dining-room, the Palm Room, is decorated in ivory and gold. The ceiling is formed of octogan panels, decorated with groups of palm-leaves, forming a pendant in the centre of each panel, from which drops an electric light in muffled glass. The walls were originally intended to have simply palm-leaf panels with silvered glass between, but a series of double-fluted pilasters have been added on each side of the palm panels, and the silvered glass reduced to one-third the intended size; this, of course, gives greater apparent height to the room. The dado is in alabaster and pavonazza marble, and the floor in marble slabs. This room will seat 100 persons. Above this apartment is the Flemish room, with high dado and ceiling of carved oak, the wall space being covered with tapestry panels; an open screen at one end divides the room. The floor is parquet. The staircase is French Renaissance in style, and is coloured in blue-grey and gold. There are also five private dining-rooms, the Louis XV. (the largest), the Pompeian, Japanese, Moorish, and the Masonic Room; these are all small apartments. The Louis XV. is in terracotta, pale grey and gold, with silk panels above the dado, divided by ornamented pilaster panels. The Japanese Room has also silk panels, but in strips of blue and brown, the dado, doors, and all the woodwork being in pitch and yellow pine, with painted subjects; these rooms have no fireplaces, but are heated by coil-cases. All the staircases and floors in the building are either concrete or stone. The builders are Messrs. Kirk and Randall. The decoration has been carried out by Messrs. Heighway and Depree and Messrs. Geo. Jackson and Sons. The whole of the interior decoration was designed by Mons. Chambon, of Brussels, and Mr. H. René Rainger, who personally superintended the work carried out by Messrs. Geo. Jackson and Sons. We published a drawing of the exterior, as also a view of the Palm Room, in the BUILDING NEWS for October 26, 1888; and on November 16, 1888, we illustrated the Flemish Rooms.

OLD ARMOUR AND FURNITURE FROM NUREMBERG CASTLE.

Among our illustrations this week is one of a group of furniture, arms, and armour from the historical collection which once found a home in the Royal Castle of Nuremberg. The piece of furniture seen to the right hand of our plate is an Early Nuremberg Wardrobe made of Hungarian ash and oak. The front is richly carved, and the construction accentuated by the three bold pilasters, the central one dividing the double doors. Shelves are fitted in the interior, and there are two drawers below. This piece is very rare, and stands about 6ft. 8in. high, is 4ft. 6in. wide, and 3ft. 4in. deep. The central cabinet of Nuremberg work is a well-proportioned and interesting piece; it is richly inlaid with marquetry of different woods in floral decoration. It would form a good model for modern cabinet work, for besides being elegant in its proportions and graceful in its outlines, it is thoroughly useful, for it has a goodly number of drawers and plentiful cupboard room, as also a commodious shelf. The other piece of furniture is a curious old Nuremberg Dresser of Hungarian ash, with scroll work of other woods in relief. It contains two doors in the body, with drawers under, and has a receding top ornamented with carved scrolls and fitted with drawers. These, with the two carved Chairs of usual German 16th-century design, are some of the more striking articles of furniture, of which there was not such a large collection as might have been expected. Coming to the arms and armour, which alone numbered some three hundred pieces, we show in our sketch three complete Suits of Armour, the earliest (that to the right) being a 16th-century tournament *cap à pie* suit, the helmet being furnished with visor, and having sharp-pointed top. The Suit to the left of central cabinet is also complete *cap à pie* armour, with goose-breasted cuirass, hinged finger gauntlets and shoulder wings. It comes from Augsburg, and is early 17th century. The figure in the left foreground is clad in 17th-century German cavalier armour. It is a fine suit, consisting of breast-plate, curious collar and shoulder blades, back and front, leg pieces with 16 hingings and winged helmet, the whole being studded with nails; the gauntlets have hinged fingerings. Arranged on the walls, or leaning against them, we have shown typical implements of war—some of them ugly customers indeed. Halberds, spears, javelins, battle-axes, and war-clubs, cross-bows, and swords, both single and double-handed. Amongst the latter is the ferocious Swiss two-handed sword, with curious guard, and whose blade has two double blood canals. This wide-reaching instrument is 6ft. 6in. long.

COMPETITIONS.

Ross.—In an open competition for the erection of ten almshouses and a common hall to be erected at Ross by Mr. T. Blake, of Ross, the design by Mr. G. H. Godsell, bearing the motto "£1,000," was awarded the first premium. The work will shortly be commenced.

Sheffield Municipal Buildings.—The particulars which we published on June 27 last, concerning Messrs. Flockton and Gibbs' claim, in consequence of the patent taken out by the firm for securing the right of reproducing the scheme of planning adopted in their original design for the Sheffield Municipal Offices, is attracting some attention in the profession. These architects have informed us this week that their patent will be completed in due course, when they will take care to publish the specification, so as to afford the profession and the public every opportunity to raise objections to the same.

Wood Carving.—The second competition for carving and art woodwork, held by the Worshipful Company of Carpenters in their hall in London-wall, has just taken place, and it is satisfactory to learn that in the number of exhibits—but more particularly in the quality of the work shown—there was a marked improvement on that of last year. Money prizes to the amount of nearly £60 were awarded besides medals, and the company have every reason to hope that with these competitions and the school of wood carving they have established at Chapel-street, Bedford-row, a fresh impetus will be given to the art of wood-carving in this country. The next competition will be held in June, 1891, and the syllabus of same will be ready in the course of this month. The following were the successful exhibitors:—E. H. Atkins, silver medal for a chair; T. Jacob, bronze medal for a table; G. Mason, £3 for truss; A. Hooydonk, £2 for truss, special prize; W. Clayton, £5 for end of church seat; W. Metcalf, £3 for end of church seat; R. A. Brangan, £3 and bronze medal for bracket; Osmond, jun., £1 10s. for bracket; H. Cooper, £1 for bracket; J. A. Vogt, £4 and bronze medal for frieze; A. W. Yeomans, £2 for frieze; W. Clayton, £2 for frieze; J. Wilkie, £2 for back for hall chair; R. S. Barnes, £5 for fruit and flowers; J. Osmond, £3 for panels; J. Journaux, £2 for panels; J. Brudtuer, £2 for panels, special prize; J. Rowell, £1 10s. for panels; Edith M. Holt, £1 for panels; P. H. Peach, 10s.; C. Wilson, 15s. Those under 18 years of age:—H. Grimwood, £2; A. E. Halliday, £1.; C. Nott, 10s.

CHIPS.

A church to seat 250 persons is in course of erection at Beaufort, Mon. Messrs. Halliday and Anderson, of Cardiff and Llandaff, are the architects.

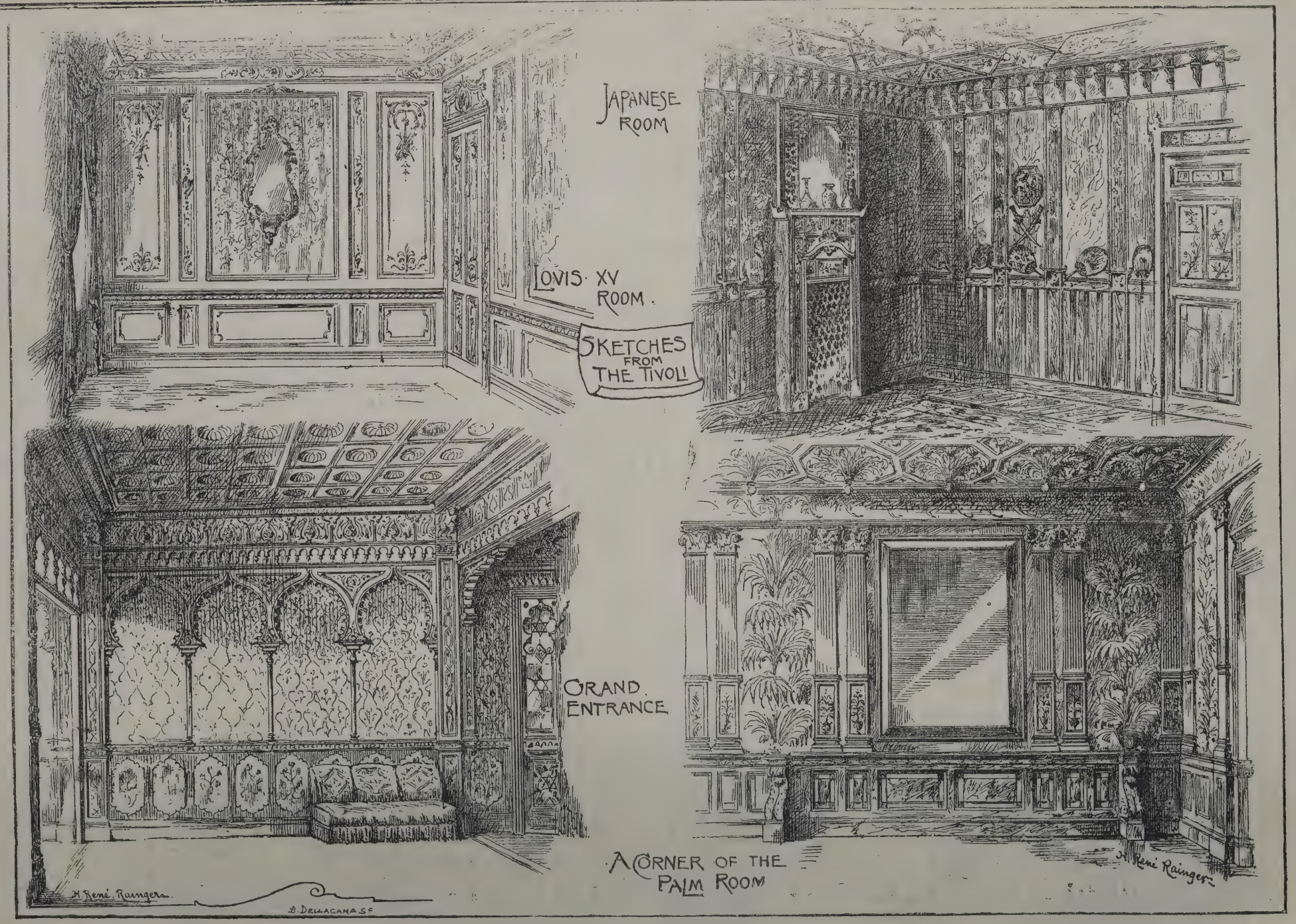
The new hospitals, Rochester, are warmed and ventilated by means of Shorland's patent Manchester stoves with ornamented tiled sides, supplied by Mr. E. H. Shorland, of Manchester.

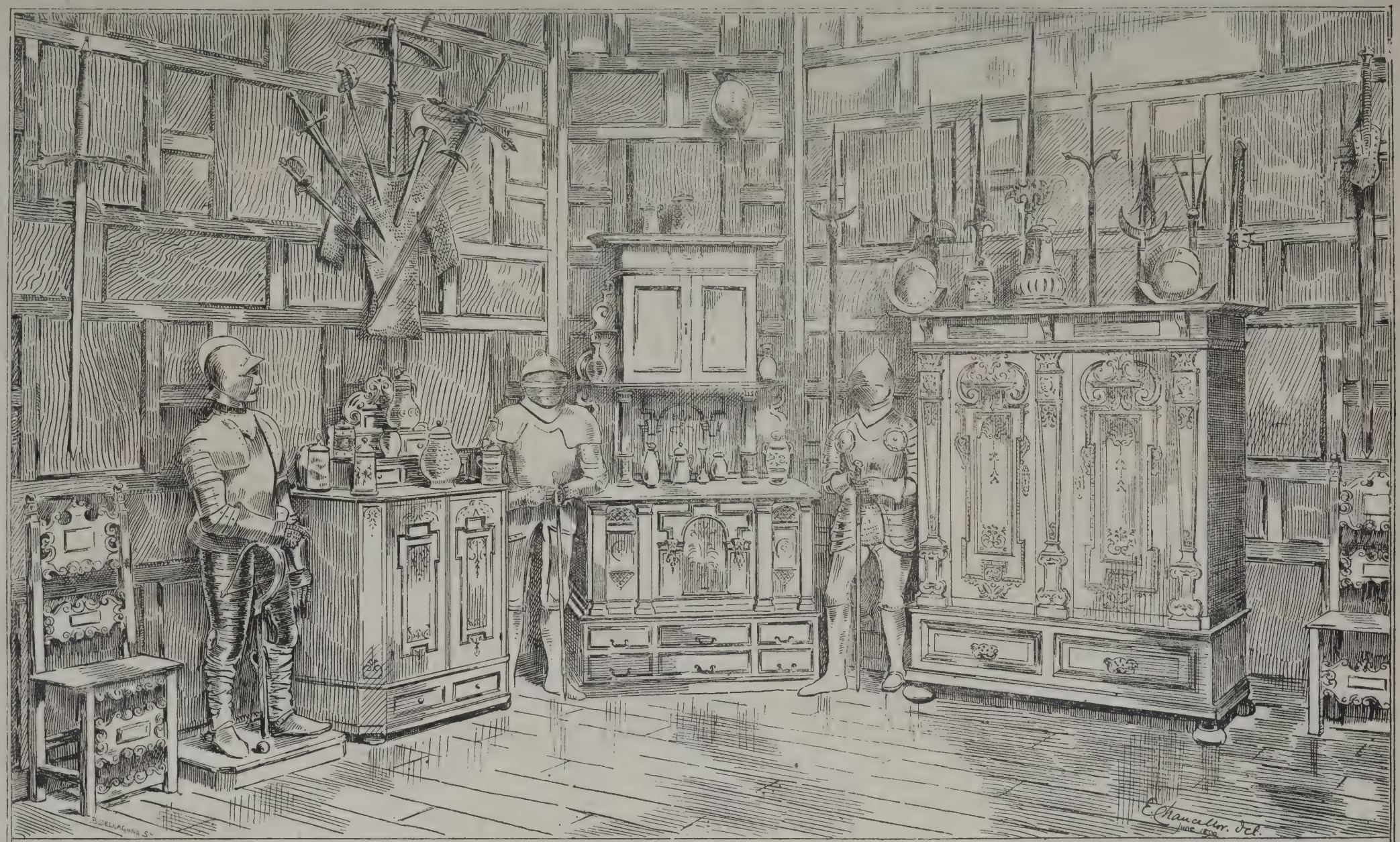
The new Nunhead and Shortlands Railway has been commenced this week. A quantity of plant, &c., has been deposited on the ground near Nunhead Station in readiness for the works. By this short junction railway the London Chatham and Dover Railway Company will tap an increasing district at present badly served, and will provide an alternative route for main line trains to that through the long Sydenham and Penge tunnel.

Mr. G. F. Watts has just completed a new portrait of Lord Tennyson, uniform in size with the other portraits of eminent men belonging to the "Little Holland House Gallery."

Memorial stones of a Welsh Calvinistic Methodist chapel were laid at Cadoxton, near Barry, on Wednesday week. The chapel is being built from plans by Messrs. Seward and Thomas, of Cardiff, and will cost about £1,000. Mr. Griffith Jones is the contractor.

The Darcy monument in the Church of St. Botolph, Aldgate, has just been restored and set up afresh at the cost of the descendants of Lord Darcy. Messrs. Daymond, of Vauxhall Bridge-road, carried out the work.


JAPANESE ROOM
LOUIS XV ROOM.
SKETCHES FROM THE TIVOLI
GRAND ENTRANCE
A CORNER OF THE PALM ROOM
H. René Rainger.
H. René Rainger.
B. DELLACANA S.C.



OLD ARMOUR AND FURNITURE RECENTLY SOLD FROM THE CASTLE OF NUREMBERG

WAYSIDE NOTES.

SANITARY engineers and surveyors have to thank the late Sir Edwin Chadwick for their means of livelihood. In the days when the world was compassed about with much filth, when middens and open sewers festered in town and country, when the water supplies contained both victuals and drink, a "sanitary engineer" would have starved. At the present time there are a very large number of men who have grown fat—in a metaphorical sense, at least—on "sanitary work." Engineers proper do not find a chance for railway-constructing, canal-digging, or bridge-building to be a common occurrence in their lives at the far end of the nineteenth century, and architects proper (or improper?) have found the crumbs that fall from Mr. Buggins's table insufficient for their daily sustenance; but in the rummaging-about in dark basements for recalcitrant drain-pipes, the insertion of newly-invented siphons, traps, gullies, &c., the annihilation of the old race of pan-closets, and in the general remodelling of drainage arrangements, scope for ingenuity and means of employment have been found. This for the last-named individuals. The engineers have scored more heavily, and are, if anything, more deeply indebted to Sir Edwin Chadwick. They have found bolder work in the redraining of whole towns, and in the remodelling of city sewers. Young architects who never would have got hold of the right end of a practice by means of an ordinary architectural job have gained a measure of independence by virtue of the proficiency they have displayed in "sanitating" a house or two; and young engineers who, while evidently embryo Brunels and Stephensons, would never have risen above a resident engineership, have won some degree of renown by successfully competing for the sewering of Slowtown-in-the-Mud. It may be thought that I lack seriousness in these assertions; but I can say with the Apostle, that I speak of that which I know, and testify to the things I have seen.

Great, indeed, has been the advance in matters hygienic since the "Father of Sanitary Science" began to work and write. Nevertheless, the present condition of things is open to vast improvement. There are doubtless many ideas of Sir Edwin Chadwick that have never been worked out and practically applied. I cannot but think, for example, that it must have been offensive to the aged sanitator to see, and what is worse, to detect the presence of, by the nasal organ, the myriad of sewer ventilators—such common objects of the London streets. To a man always labouring on some scheme for benefiting the health of the community in general—and often of London in particular—it must frequently have become evident that something was wrong with a system that proved such a general nuisance in the heat of summer. The shortcomings of our London sewerage arrangements may escape the attention of eminent persons engaged in their amplification, and may not be observed by those who devote their time to sewage disposal; but they are evident enough at all times to those ordinary individuals who think at all of the health of London, and in hot weather they are made apparent to the most easy-going citizen. This defect or misapplication of ventilators to London sewers may have escaped the attention of the *father*, not only of sanitary science, but of professors of sanitation, and, if so, I can only hope that some day one of the numerous *sons* will take up the matter and induce authorities to look about for some method of reform. To so deal with the air of the sewers that it may not be discharged under our noses, and in its crude state, cannot be such a very difficult task for engineers in 1890. It would, indeed, appear to be one of those things that are neglected because they are so simple.

As for the manufacturers of sanitary wares, they have had a rare benefit out of the reforms of the last few years. Fortunes must have been made in drain-pipes alone. We can get no better idea of the development of sanitary science than that afforded by a consideration of the extent of the industries engaged in making glazed earthenware goods of one kind and another. They have grown to an enormous size, some of the largest business concerns being those principally engaged in turning the crude clay into the various pipes, &c., required in a complete and efficient drainage system on the most approved modern principles. Should it be proposed, as I doubt not it will be, to raise a monument in memory of Sir Edwin Chadwick, some of the large manufacturers ought to consider it their duty to come forward with liberal subscriptions. Their business has arisen from the rage for sanitation, and not a merely passing rage, but one that has a permanent hold on the world. Long may it so continue to do, and may the improvements effected be but a fragment of the whole benefits to come. And, above all, may the principles of sanitary science become more clear, its applications more simple, and may they be jealously guarded against self-seekers and faddists, who either complicate and involve or add superfluities and over-refine!

I foresee an increase in the smoke nuisance. From a certain date last week, I believe the "reforms" comprised in the abolition of some old dues that afforded a substantial relief to the rates in London, and hurt no one, came into operation. In consequence, I understand, the import of coal into the Metropolis has at once vastly increased. Coal is cheaper, and will be in the future, so far as concerns the London buyer. The result of cheapening any article of commerce is generally *waste*. Waste of coal means so much more smoke—and this is the pleasant reflection before us in view of next winter.

The County Council have shortly to elect a new chairman—for what reason is not very apparent. At the weekly meeting, on Tuesday, Lord Rosebery stated that he proposed to send in his resignation some time this week or next—his resignation will be declared the week after, and at the last meeting before the summer recess the election would take place. I presume Lord Rosebery can stand for re-election; anyhow, the Council will not get a better chairman. I may be wrong; but it seems to me that often the Council would have gone sadly astray but for the staying power and moderation of its chairman. I doubt whether the Council would have acceded to the recommendation of the Improvements Committee that it "be instructed at the next meeting of the Council to bring up details of the schemes for improvement to which we refer"—various improvements proposed by the Committee—unless Lord Rosebery had emphatically given it as his opinion that in the proposed improvement "betterment" did not play either a large or a prominent part. As a consequence, the Council agreed to the recommendation, and we are happily, it is to be hoped, spared an extraordinary and ridiculous performance. This would have consisted in the Council's "blocking" or laying aside every proposed Metropolitan improvement until Parliament have recognised the principle of betterment, and its enforcement in every proposed future improvement! Many will smile at the idea of such a thing; but it does appear from the words in the report of the Improvements Committee that this was nearly coming to pass. A farce it would have been, in every rational person's estimation, and none need be so glad that the recommendation of the Improvements Committee was agreed to as the Councillors themselves. They will be well-advised in letting the betterment business drop for a bit. There has already been sufficient expression of opinion to show that the betterment principle is generally unpopular—at any rate with regard to the Strand Improvements Bill, and to go in the face of this opinion, and the opinion of Parliament, will be a piece of folly which we would not accredit to the Council. The business, I take it, is to improve London for the citizens of London, and not to say, in a high-handed, dictatorial manner, that unless the improvements are carried out on a certain principle they shall not be carried out at all.

In pulling down old parts of London for improvements, either public or private, many poor people are unhoused, and there is considerable anxiety evidenced in Parliament and elsewhere, at different times, that new accommodation should be provided in lieu of the old buildings pulled down. This thoughtfulness for the poor, who cannot help themselves in these matters, is to be commended, for there are cases where disturbances to make room for improvements in crowded sites may cause the greatest trouble. It may be necessary for a labouring man to be up so early in the morning that he must reside as close as possible to his place of business, and there may be other reasons for a man's having to live in a certain place. Apart from these considerations, it is a question whether the principles concerned warrant the replacing of the homes in or near their old positions. It is now possible for a labouring man, in consideration of a quarter of an hour's wage, to go and return daily from the heart of London to "country suburbs," where his family will be brought up healthy and happily, instead of in the misery and squalor of a city slum, and where, when his day's work is done, he will have sources of recreation other than that afforded by the neighbouring public-house. It appears to me that the facilities offered by the nominal fares charged for working-men's tickets into the suburbs are not sufficiently regarded by persons who interest themselves in the matter of new dwellings, and that, in the development of the system of cheap railway travelling, many of the identical difficulties attendant upon city improvements will find an easy and happy solution.

Goth.

NEW HOSPITAL WINGS AT JAMES MURRAY'S ROYAL ASYLUM, PERTH.

WE have received "A Description of the New Hospital Wings" to this asylum, by Dr. A. R. Urquhart and Mr. A. Heiton, F.R.I.B.A. The authors describe the old asylum, opened 62 years ago, and arranged as two parallel blocks connected by a central administrative building. The south block contains six wards, three to each sex, and is of three floors. The lowest of them was used for excited patients; but the day rooms were required for stores, and it was found adapted for sleeping accommodation only. On the principal floor above are the wards for chronic patients, over which are the wards for convalescents. The plan appended shows how these galleries have been altered from the central corridor arrangement. Referring to the north block, the authors point out the additional accommodation made for the sick and infirm patients by the new wings. The number of patients resident in the asylum may be thus increased from 95 to 126, ample space being found for nurses, attendants, stores, &c. As the Classical style of the original plan was found necessary to be adhered to, the arrangement shown in the plan suggested itself, and appears to meet the requirements in a very ingenious manner. The wings extend east and west from the north or main block, thus forming right-angle projections. The intermediate gallery forms a useful separation between the old and new buildings, and is intended for the treatment of acute excited cases. The doors and windows are arranged to minimise noise and disturbance to other patients, and a resisting patient can quickly be restrained by attendants from both sides of the gallery. A bay window which can be curtained off, a fireplace and closet, and an airing terrace on the same level are provided. Another gallery running N. and S. is connected at right angles opening into single rooms. This gallery also has its lavatory, cloak-room, and porch, a bay window and fireplace for infirm patients. The single rooms are arranged so that two communicate, and may be used as two bedrooms, or as parlour and bedroom. The gallery or corridor leads directly to a large day-room and dormitory, forming a return block to each wing, with lavatories in connection. A service-room, with a projecting window overlooking day-room and dormitory, enables the attendants to serve the meals while overlooking the patients in the large rooms. The heating is by steam, delivered from the boilers at a pressure of 20lb., reduced to 5lb. on the square inch. The steam is distributed by 2in. cast-iron pipes behind the skirting of the outer walls, which are easily got at. The ventilation is also said to be satisfactory. Each room and corridor has its independent supply of fresh air and exhaust. A concrete channel is made between two joists for cold air, lined with cement, one end communicating with the open air by a valved grating, and the other end with a grating in the skirting. From the ceiling of each room or corridor a 12in. square zinc pipe is led to the ridge with an exhaust ventilator on the top, and the draught is assisted by the gas-pendant or the hot-water cisterns. Over the door of each room is also a ventilator that can be opened when the outer air is too cold. Dr. Findley's observations on the heating and ventilation of the asylum show that the results of this natural system are satisfactory. Details of the warming and ventilating arrangements are

given. To obtain the full benefit of the sunshine, the windows are made as large as possible, and the proportion of window to wall-space in the principal rooms is 1 to 10. The sashes have a deep bottom rail, and the soffit splayed upwards and inwards, so that a current of air can be admitted at the sash check. In the principal rooms the windows are carried up in pediments to the ceiling level, and this upper light is of small, tinted panes, hung to fall inwards at the bottom to any desirable inclination. As regards fittings and details, the wall-spaces are lined with moulded pitch-pine, 6ft. high; the upper portion of wall in day-rooms is finished in panels, with Keene's cement mouldings, filled in with Japanese leather paper; the ceilings are coved and panelled in ornamental squares. Fireplaces (Barnard, Bishop, and Co.'s) are fitted in the rooms and corridors. The window recesses in the dormitories are filled with low cupboards of mahogany, and surrounded by ferneries and aquaria, and in the day-rooms have cushioned seats.

ARCHITECTS' JOINERY.

WE have received Part II. of Mr. F. A. Fawkes' work on "Architects' Joinery and its Ornament," published by Mr. B. T. Batsford, which is an illustrated price list of various mouldings, plain and enriched ornamental pine chimneypieces and overmantels, and dado panelling. Plate 30 gives a number of full-size sections of plain dado and picture rails of good profile, and photographs of the mouldings, giving an excellent idea of their actual appearance, follow in another plate. Many of them are very effective. Plain skirtings follow, showing examples from 9in. to 14½in. deep, ranging from 32s. to 48s. at per 100ft. run. The enriched mouldings for dado rails show dentil, fluted, Vitruvian scroll, egg-and-tongue and Greek fret, Roman and Italian ornament enrichments. These are also illustrated by photographed examples. The mantelpieces are various, and four plates are devoted to them. The designs include the very plainest description suitable for small sitting-rooms, bedrooms, and those for high-class residences range in price from £2 2s. to £12 10s., including overmantels. Dado panelling is also illustrated, and prices given. Mr. Fawkes' joinery is manufactured at Chelmsford, and we recommend this supplementary and illustrated list to the profession.

UNDERPINNING OPERATIONS IN EUSTON-ROAD.

THE alterations incident to town buildings frequently necessitate underpinning—an operation which requires close personal supervision and much ingenuity. At the corner of King's Cross and Euston-road two old houses are in process of conversion into a new restaurant for Messrs. Reggiori Brothers, the plans for which have been prepared by Mr. Robert Willey, F.R.I.B.A., of Ludgate Chambers, and the work is being carried out by Mr. Howell J. Williams, builder, of St. Andrew's-hill, E.C. On the ground-floor the plans propose a grand saloon, extending from Euston road, 88ft. in depth, to King's Cross theatre, and 16ft. in width to a distance from the footway to the front wall of the old houses. Beyond this the width is increased to the full extent of the two houses, the latter of which abuts on Liverpool-street. In both this street and Euston-road shop-fronts are required. Under the first house it was necessary to remove three of the four walls, the fourth wall being the party-wall dividing No. 3 from the adjoining house on the west side. The upper part of these houses required to be carefully supported by needles and uprights, and in the side abutting on the theatre as well as at the side party-wall, underpinning had to be resorted to so as to make the basement below the saloon 6ft. in height. The walls thus removed are supported beneath the first floor by three wrought-iron girders, two cross girders of 16ft. bearing carrying the front and back walls of No. 3, and a long girder supporting the party-wall on the east side. Thus three of the supporting walls have been removed; short needles were introduced under the chimney jambs of the party-wall and the front and back walls at intervals, supported by dead shores. The walls below have been so successfully removed that not a crack is visible in the old walls and ceilings above. The east party-wall thus underpinned is 18in. thick below and 14in. above the first floor, and the girder carrying it are supported at the ends by cast-iron ribbed stanchions, and by two intermediate iron columns resting on brick piers in cement brought up from the basement. The shorter girders carrying the front and back of the house also rest on similar stanchions built into the walls. The underpinning of the party-wall on the west side, also that of the theatre in the rear, has been undertaken in short lengths, about 3ft. at a time, and the new work rests on a bed of cement concrete 2ft. 9in. in depth. The theatre wall, which is not very sound in the bond, has been underpinned to a depth of 9ft. We congratulate Mr. H. J. Williams, the contractor, on the success attending the operations, which were of an unusually skilful character. The whole of two houses, three stories in height above the first floor, have thus been underpinned on every side, and the old walls below completely removed, their weight being transferred to girders and columns. The work is the more satisfactory from the fact that it has been accomplished without the slightest settlement, and under the vigilance of surveyors acting for the adjoining properties. The work has been carefully superintended by P. Renouf, the foreman, and under the supervision of Mr. W. Chapman, clerk of works, acting for the architect.

CHIPS.

The Marquis of Ripon formally inaugurated on Monday a free public library which has been established at Barnsley through the munificence of Mr. Charles Harvey, of Park House, Ardsley. The circumstances under which the gift has been made are peculiar. In the year 1877 the Public Hall was opened, the erection of the structure having been carried out by the Barnsley Public Hall and Mechanics' Institute Company, Limited. The company was floated with a capital of £16,000, but from the beginning it found itself in difficulties, and the property had to be mortgaged to the extent of £11,000. When it became impossible to pay the 2 per cent. interest, Mr. Harvey, who held the mortgage, offered to give it to the town for a free library, and £600 has been spent, under the direction of Mr. J. H. Taylor, the borough surveyor, in adapting the building to its new purposes.

Mr. A. W. Bean, J.P., died on Tuesday week at Danson Park, Welling, Kent, where he had resided for over a quarter of a century. He was a partner in the firm of Messrs. Jackson and Bean, contractors, a firm formerly well known throughout the country. Mr. Bean was in the 66th year of his age.

The Prince and Princess of Wales opened, on Monday, Vauxhall Park, which has an area of about eight acres, and has cost upwards of £43,000.

The Victoria Hospital at Folkestone was opened by the Duke of Edinburgh on Thursday, the 3rd inst. It has been built at a cost of £7,000 on a site adjoining Radnor Park, and contains 35 beds. Mr. Joseph Gardner, of Folkestone, is the architect.

The town council of Oswestry have appointed Mr. Thomas Lockwood, of Chester, architectural assessor in the forthcoming competition for new municipal buildings, at a fee of £30. The Duke of Norfolk, who owns, among his numerous inferior titles, that of Baron Oswaldestre, has offered a donation of £50 towards the cost of the buildings, with a letter expressing a hope that whatever style is chosen, it will be "a thoroughly English one."

Last week it was stated that the architects for the new tower, Clifton College, were Messrs. Dunn and Hansom. We are requested to state that the architects were Messrs. Hansom and Bond, of Bristol.

New paper-mills have been erected at Wookey, near Wells, and special attention has been paid to the ventilation, the extraction of the vitiated air being effected by Messrs. Robert Boyle and Son's latest improved patent self-acting air pump ventilators.

A new post-office was opened at Totnes last week. It is built of brickwork with Bath stone dressings, from plans by Messrs. Heywood and Wooster, of Bath. Messrs. Brock and Ash, of Totnes, were the contractors.

The foundation stone of the new church of St. Jude, at Shieldfield, Newcastle-on-Tyne, was laid on Friday. Mr. A. B. Plummer, of Newcastle, is the architect.

A mission church to accommodate 150 adults has just been opened by the Lord Bishop of Llandaff at Cymmer, Glamorgan. Messrs. Halliday and Anderson, of Cardiff and Llandaff, were the architects.

Building Intelligence.

CARDIFF. — The foundation-stone of the Welsh Church of St. David in Howard Gardens was laid by Lord Tredegar on Wednesday week. The church is Perpendicular in style, and when completed will accommodate 500 worshippers. It will consist of a chancel 38ft. 6in. by 22ft. 3in.; nave, 67ft. by 24ft. 3in.; and north and south aisles 67ft. by 11ft. 6in., divided from the nave by a moulded arcade carried on octagon shafts, with moulded caps and bases. These arches are to be surmounted by a clerestory, pierced with two-light windows with foliated heads, the aisles being lighted with traceried windows of different designs. The roof of the chancel will be barrel-shaped, and boarded underneath the timbers. This roof is to be constructed of unpolished pitch-pine and divided into three bays, with moulded arched ribs, and sub-divided into panels with transverse moulded ribs, a carved patera being placed at each intersection. The roofs over the nave and aisles will be similar, but will be divided into five bays, with hammerbeam principals filled in with tracery. The seating and choir-stalls will be executed in unpolished oak. The passages in the nave and aisles will be paved with encaustic tiles, and the church will be heated with a small-tube high-pressure apparatus. Outside, the walls are to be faced with grey Maesycymmer stone in thin courses, and the dressings of the windows and doors are of Box Ground stone. The roofs are to be covered with green slates. The tower, measuring 13ft. 6in. at the base, and rising with spire to a height of 100ft., will be situated at the north-east angle. The estimated cost of the complete church is £5,500. The first contract is let to Messrs. Shepton and Sons, of Cardiff, for £4,179. Mr. E. M. Bruce-Vaughan, of Cardiff, is the architect.

MIDDLESBRO' SCHOOL BOARD. — On Monday last, the foundation stone of the Grange-road Schools was laid. The buildings, which will cost upwards of £20,000 including the site, stand upon a rectangular plot of ground, having frontages to Albert, Grange, and Dunning roads. Accommodation is provided for 1,228 children. A department for the teaching of cookery is part of the scheme; there is also a caretaker's house. In connection with each department there are covered play-sheds, and private rooms for the teachers. The buildings, which will be fireproof throughout, are of brick with pressed brick facings and red stone dressings from the quarries at Corncockle, in Dumfriesshire. The style adopted is a free treatment of the Renaissance. The ventilation will be by fresh warm-air inlets and exhaust air-pump ventilators. Open fireplaces are provided for auxiliary heating. The grates and mantelpieces are supplied by the Burmantofts Works, Leeds. The architect for the buildings is Mr. J. Mitchell Bottomley, 18, Albert-road, Middlesboro'-on-Tees, whose design was selected in competition under the adjudication of Mr. E. R. Robson, the architect to the Education Department. The clerk of the works is Mr. T. Todd, and the contractor for the whole of the works is Mr. Joseph Lord, of Middlesbro'.

NEWCASTLE-ON-TYNE. — The foundation-stone of St. Augustine's church, Brighton-grove, was laid last week. The church is being built from designs by Messrs. Johnson and Gibson, architects, by Messrs. N. and J. Reed, builders, Corporation-street. The edifice is designed in a simple type of Pointed architecture, and will be constructed entirely of stone. When completed it will consist of a chancel 35ft. by 25ft., with morning chapel on the south side and vestries on the north; a nave 85ft. by 29ft. having north and south aisles of the same length, and each about 12ft. wide. The nave is separated from its aisles by six arches on each side, and there will be a high clerestory of triple lancets, with a similar window at the west end, high up in the gables. The east window is also to be a triplet. There will be a high chancel screen under the arch, and the altar, with its reredos, will stand on a platform elevated by eleven steps above the floor of the nave. The roofs of both nave and chancel will be panelled internally with wood. The nave will be 44ft. high internally, and the chancel 35ft., and the external height of the ridge will average rather more than 60ft. above the ground. Only five bays of the nave are contracted for at present. When finished, the church will hold 900 people.

SOUTH SHIELDS.—The new Post Office at

South Shields was formally opened on Monday. It has been erected on the site of Kepple House, with frontages of 70ft. to Russell-street, and 90ft. to Smithy-street. The style is Queen Anne, executed in terracotta and red brick facings. The terracotta has been supplied by Messrs. J. C. Edwards and Co., of Ruabon, Wales, and the red facing bricks are from Grosmont, near Whitby. The main building has four floors. In the basement there are rooms for letter-carriers, clerks, and linemen. The public office is on the ground floor, with a porch in Russell-street, and is 38ft. by 20ft. On the same floor is the sorting office, 62ft. by 28½ft., and 15ft. in height, with open roof. The instrument room, over the public office, is reached by a stone stairway, and measures 38ft. by 21ft. The building is fire-proof, the floors being carried by strong rolled-iron joisting and cement concrete arching, on which are laid the tile and wood floors. The sorting office floor is of concrete, with pitch-pine block flooring laid on the same. The walls to the basement are built with a cavity, filled with White's hygeian rock, to secure perfect dryness. The contract for the building has been carried out by Mr. Joseph Elliott, of North Shields, from the designs of Mr. Henry Tanner, of her Majesty's Office of Works, London, and under the supervision of Mr. T. Searchfield, of London. The fittings have been supplied by Messrs. R. Goodwin and Son, of South Shields.

WOLSINGHAM.—A new convent and boarding-school, dedicated to St. Anne, was inaugurated on Monday by Pontifical High Mass at the church of St. Thomas of Canterbury, Wolsingham, adjoining the new building. The buildings are erected upon a site of two acres. At either side of the main entrance are large reception and sitting-rooms; there are also day-rooms for boarders and day-scholars, dormitories, chapel, school and class-rooms, lavatories, and baths. The school-room is 48 by 22ft., the class-room 28 by 15ft., the principal dormitory 55 by 30ft., and the Infirmary 20 by 18ft. The building is surrounded by gardens, grounds, tennis-courts. The convent has been planned by the pastor, the Rev. Father Taylor Smith. The contractors for the work were Mr. J. Hopper, Wolsingham, builder; Messrs. Dobinson Brothers, Wolsingham, joiners; whilst Mr. F. Taylor, of Stanhope, and Mr. W. Wray, of Tow Law, executed the painting, plumbing, gasfitting, and glazing; and Mr. R. Collie, Newcastle, the electric bells and speaking tubes. The sanitary arrangements have been constructed under the inspectorship of Mr. W. M. Egglestone, of the Sanitary Authority of Stanhope.

Messrs. A. Lethbridge and Son, of Plymouth, have taken the contract for building, at the Foundry-ope, King-street West, a model lodging house, which Dr. Alfred Hingston is about to erect, at a cost of £2,200. The model lodging-house is intended for the reception of tramps, and will be four stories in height. It is to be built of red brick, with stone and cement dressings; the ground floor will contain a huge kitchen for cooking food for the inmates, and the interior will be fitted up with baths, lavatories, and sleeping accommodation.

The trustees of the Northern Technical and Recreative Institute have completed the purchase of a valuable freehold site of upwards of an acre and a half area, with a frontage of 130ft. to the Holloway-road, whereon to erect the buildings required for the purposes of the institute. The buildings are proposed to include a large central hall, available for lectures, concerts, industrial and art exhibitions, class rooms for various studies, workshops for technical teaching, and a gymnasium.

An extensive fire occurred on the premises of Messrs. Grimwood and Sons, builders and contractors, at Sudbury, Suffolk, on Wednesday week, originating in the engine-house. The flames spread so rapidly that forty workmen had to run for their lives. The premises and workshops were destroyed, the workmen losing their tools, neighbouring cottages were greatly damaged, and families rendered homeless. The damage is estimated at £15,000.

On Thursday the Blyth Dry Dock Company opened their No. 2 graving dock in the Tyne. The new dock is constructed to a temporary length of 285ft., but will be extended to 370ft. at an early date. It is 47ft. wide, with a depth of water on the sill of 18ft. at ordinary spring tides. The work of construction has been carried out by the company's officials, under the superintendence of Mr. J. Watt Sandemann, C.E., of Newcastle.

Mr. W. F. Tollit, of Totnes, has been elected borough surveyor by the corporation of that town, in the place of Mr. S. Cuming, resigned.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

THE BRITISH ARCHÆOLOGICAL ASSOCIATION.—The 47th annual congress of this society is being held this week at Oxford. The opening meeting took place on Monday, the Earl of Winchilsea and Nottingham presiding. The mayor offered, in the name of the city and University, a hearty welcome to the members and visitors of the congress. The party, led by Mr. E. G. Bruton, F.S.A., and the hon. local secretary, Mr. H. Hurst, B.A., subsequently proceeded to the examination of the Radcliffe Library, the Bodleian Library, where the librarian received and addressed the visitors, the Divinity School, and the Ashmolean Museum. In the evening a public dinner took place at the Randolph Hotel. The Earl of Winchilsea and Nottingham presided. On Tuesday the members inspected Merton, New, and Christ Church Colleges. In the afternoon the party paid a visit to the new Museum in the Parks, and in the evening papers were read in the new Examination Schools, which have been lent to the members of the congress for that purpose during the week.

EXETER DIOCESAN ARCHITECTURAL SOCIETY.—The annual meeting of the Exeter Diocesan Architectural Society was held in the College Hall on Tuesday, June 24th, the Archdeacon of Exeter taking the chair. The secretary, Rev. J. L. Fulford, read reports—one of the visit of the Society to several North Devon churches, Crediton, Chittlehampton, Atherington, South Molton, West Anstey, describing the improvements that have recently and of late years been made in those churches, the arrangements for the excursion having been made by Rev. E. V. Freeman, also a secretary. A paper was read on "Mediæval Decoration" by Mr. C. J. Tait, architect, well illustrated, describing modes of colouring wall surfaces, examples of stained glass, and glancing at more ancient art visible on the remains of Egyptian and Greek temples. The volume of "Essays," Vol. V. Part 2, new series, containing papers on "Church Plate," &c., was issued.

CHIPS.

Only one out of five candidates for the special higher sanitary science examination of the Surveyors' Institution passed—viz., Mr. P. E. Pilditch, of 17, Parliament-street, S.W.

The new French Hospital in Shaftesbury-avenue, built at a cost of £22,000, was opened on the 3rd inst. by M. Waddington, the French Ambassador, who announced that his Government had appointed Mr. Thomas Verity, the architect of the building, a Knight of the Legion of Honour. The new building contains 60 beds.

Friday was Speech Day at Uppingham School, and a numerous company assembled for the opening, by Lord Norton, of the new school-house and the tercentenary class-rooms, which have been erected from designs by Mr. T. Graham Jackson, M.A.

At the last meeting of the Newark-on-Trent town council, the Castle Gardens Committee reported that the work at the castle for the preservation of the ruin had been begun, and that Mr. Bradshaw had been engaged as foreman at a salary of £2 per week, and that the work would be done under the direction of Mr. Hodgson Fowler, F.S.A.

The Queen has consented to open the large new deep-water dock at Southampton, which is to be named the Empress Dock, in honour of her Majesty. The ceremony will take place on the afternoon of Saturday, the 26th inst.

A fire broke out on Saturday morning in the steam saw-mills of Messrs. Cotton and Smith, between the Kingsland-road and the Hackney-road. Great damage was caused, not only to the main premises, but to a number of adjacent houses and workshops.

New premises are about to be built in Liberton-road, Edinburgh, for the housing of the Industrial Home for Fallen Women. The building will be two stories in height, will accommodate 32 inmates, and will cost about £2,000. The architect is Mr. Robert Wilson, Queen-street, Edinbugh.

King Humbert assisted on Sunday at the inauguration in Rome of the first electric tramway constructed in Italy. It runs from the Porta del Popolo to the Ponte Molle, about a couple of miles outside the gates. The engineers are Messrs. Ritchie and Mandell, and the whole of the machinery has been sent from England.

The foundation-stone of the Mears' Memorial schools attached to the Wesleyan Chapel at Bitterne, near Southampton, took place last week. Mr. Witt, of Bitterne, is the builder.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLI., XLVI., XLIX., L., LI., LIII., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—W. McF. and Co.—J. F. and Co.—T. P. L.—W. E. and Co.—T. and Co., Ltd.—H. E. and Co.—W. G. P.—J. W. S. and Co.

W. M. TOLLIT. (There is no doubt that the plans are the property of the client. The matter has never been carried to the highest authority; but so far as it has been carried, the decision has been unfavourable to architects.)

Intercommunication.

QUESTIONS.

[10313]—**Columns.**—Will Mr. G. A. T. Middleton be good enough to explain the meaning of C in his chapter on "Columns and Struts"? Will he work the formula in figures?—BORE.

[10314.]—**Ancient Lights.**—Will some kind reader help me out of a curious difficulty? A. has a window 4ft. wide, 3ft. 9in. high, fixed in the gable end of a house overlooking B.'s land; the sill is 2ft. 6in. off the ground level. How close can B. build up to A.'s window?—J. BROOKE, Crewe.

REPLIES.

[10310.]—**Quantity Surveying.**—London surveyors, as a rule, do not deduct brickwork where against stonework, unless the latter is *more* than 6in. high. The item of "*Fir in ground-floor joists and sleepers*" is taken apart from upper floors, the latter being billed as "*Fir framed in floors.*" Under this rule it will be observed that in the case of a basement having a wood floor and joists, the floor near the ground level becoming an upper floor, is classed with the "Fir framed in floors." Fletcher's table, although rendered in unusual order, confirms this principle. The several parts in ordinary roof work are billed together as "*Fir framed in roofs*," at per foot cube, although some surveyors prefer to super ridges, hips, and valleys, stating thicknesses. Roof trusses necessarily receive special treatment in bill, and in addition an item is usually allowed for hoisting each truss. Generally speaking, even the present London method of dealing with "*Fir framed*" is open to grave objections, particularly when applied to floors.—H. BUSHELL.

At the monthly meeting of the Bolton Town Council on Wednesday the salary of the borough surveyor (Mr. J. H. Brockbank) was raised from £250 to £350 per year.

Under the terms of the Chantrey Bequest, the Royal Academy Council have purchased Mr. George Clausen's "Girl at the Gate," from the current exhibition at the Grosvenor Gallery.

LEGAL INTELLIGENCE.

A BUILDER AND FISHMONGER.—BENNETT v. WHISTOOKE.—At the Wandsworth County Court on Tuesday week, the plaintiff, a plumber, of Streatham, sued the defendant, a fishmonger, of the same place, for £13 13s. 4d., the balance of contract, £23 13s. 4d., for building a stable, &c., at Greyhound-lane, Streatham Common. This case was first heard on April 29th, and was referred to Mr. R. M. Hiscocks, the surveyor, to measure up the works in dispute and report to the Court. The referee now handed in his award, the finding being for £19 18s. 4d. for all works executed. The defendant put in a counter-claim of £2 12s. for goods supplied, also a set-off of £10, cash paid on account, leaving a balance of £7 6s. 4d. due to the plaintiff. His Honour gave judgment for plaintiff for £7 6s. 4d. with costs. The £7 8s. was paid into court by the defendant too late to save costs.

WHAT IS A "STREET?"—THE QUEEN v. THE MAYOR AND CORPORATION OF MIDDLESBROUGH.—(Queen's Bench Division, July 6. Before Lord Coleridge and Mr. Justice Wills.)—This case raised a question under the Act of 1888 to amend section 156 of the Public Health Act, 1875, by substituting for his enactment—"That it shall not be lawful in any urban district, without the written consent of the urban authority, to erect or bring forward any house or building in any street, or any part of such house or building, beyond the front main wall of the house or building on either side thereof in the same street, nor to build any addition to any house or building beyond the front main wall of the house or building on either side of the same." The question had arisen as to the effect of this enactment in cases of new streets only laid out or with a few scattered houses at considerable distances from each other. It had arisen at Middlesbrough, where a new street had been laid out by the corporation on one of the main roads or approaches to the town, and which they were anxious to make as spacious as possible. The old by-laws, before the late Act, required plans of new buildings to be laid before their surveyor, and these required the width of a front street to be 48ft. The new street was called Almerston-street, and it was in line with a road 50 years old—Woodland-road—in which there were one or two houses set back 30ft. A person who proposed to build a house in the new street sent in a plan, which showed that it would be set back 30ft. There was in the new street only one house erected or set back, and that was 800ft. distant, while the one in Woodland-road was above 400ft. off. On reconsideration the builder proposed not so to set back his house, and he sent in another plan showing it not set back, which the corporation would not approve of. The builder applied for a *mandamus* to the corporation to approve the plan. A house in the same road was set back 70ft. Mr. R. S. Wright, for the corporation, sought to show cause against the application for a *mandamus*. Mr. J. Forbes, Q.C., appeared for the builder in support of his application for a *mandamus*, and urged that these were different streets, one being 40 years old and one other only laid out with one or two houses in it, and that in the new street the nearest house set back was 800ft. distant, and the other was set back 70ft. [Mr. Justice Wills: If the corporation are justified in requiring the proposed house to be set back 30ft., they might as well require it to be set back 70ft.] Just so. There is no house at present on "either side" of the site of the proposed house. The Court said the case was clear. The new road was not yet a street, and there were no houses on either side of it," so that the enactment did not apply. They held, therefore, that a *mandamus* must issue—that is, unless the corporation approve the plan in accordance with the opinion of the Court.

ST. ALBAN'S CATHEDRAL.—Mr. G. H. Knight, the registrar of the diocese of St. Alban's, has held a court at the cathedral to receive notice of any opposition to a petition by Mr. Hucks Gibbs for a faculty to complete the high altar screen. Mr. Sharp appeared on behalf of Mr. Gibbs. No one appeared to oppose the petition, and the registrar intimated that the faculty would be granted. Mr. Gibbs asks for a faculty to complete the statues on the screen, also to put a stone cross on the blank space in the centre, and a sculptured group in the panel over the altar, representing the body of our Lord taken down from the cross—this group is proposed to be executed in wood, stone, or terra-cotta, and coloured.

IN RE QUINN.—An adjourned meeting of creditors has been held under the failure of Mr. Thomas Quinn, M.P. for Kilkenny, and described as of the State-office, Popham-street, Islington, builder and contractor. The failure occurred in January last, the liabilities being returned in the statement of affairs at £75,748, of which £11,260 only had been proved, with assets £919. Resolutions were passed accepting a composition of 3s. in the pound, payable in 6d. in cash, and 1s. 6d. in six months.

FREEHOLD PROPERTY AT STRATFORD.—The Inspire (Mr. Henry Currey, F.R.I.B.A., of Norfolk-street, Strand), in the compensation case of Carder and Clarke v. West Ham Corporation, has issued his award for the sum of £15,705. In connexion with the widening of High-street, Stratford, Messrs. Corder and Clarke claimed together compensation to the amount of about £25,000 for the compulsory purchase of their freehold interest in a corner plot of house and shop property, with frontage to High-street and to Chapel-street, comprising a superficial area of 35,623ft. In evidence on behalf of the claimants, Mr. R. Reid valued at a total of £23,725; Mr. A. Garrard, at £22,498; and Mr. W. J. Beadel, M.P., at £21,252. On behalf of the corporation, Mr. W. Eve valued the whole property at a total of £11,857, excluding the usual 10 per cent., but subject to a reduction of £1,000 on account of the property being held in undivided moities. Mr. E. Ryde valued at £10,200 (setting reduction of value on account of divided ownership against forced sale allowance); Mr. T. Chatfeild Clarke valued at a total of £11,934, less £1,000, as above.

RE WILLIAMS, FRY, AND CO.—A meeting for public examination was held before Mr. Registrar Linklater on Tuesday, the bankrupts being described as of New Stone-buildings, Chancery-lane, and of Stone, Greenhithe, cement merchants. The liabilities are £9,347, of which £3,681 are expected to rank, the assets showing an estimated surplus of £423. The bankrupt Fry, examined, stated that he became associated in business with Mr. Williams in March, 1887. They were general traders, and undertook building and engineering contracts. A capital of £3,000 was brought in by Williams in 1888; but prior to that time they had a large amount of liquid assets. He knew when he joined Williams that they could finance to the extent of £2,000 or £3,000. They built a laundry at Ealing at a cost of £5,000 for the Ealing Sanitary Laundry Company. He was honorary secretary and director of the company, Williams being a director, but they resigned their appointments prior to these proceedings. He (Fry) promoted the company, and the preliminary expenses of promotion were paid by the company. In December, 1887, they took land at Stone and ran up a cement manufactory, spending £7,000 or £8,000 thereupon. That business was also turned into a limited company. The proceedings were adjourned in order that the bankrupts might comply with certain requisitions.

CHIPS.

The parish church of Longridge, near Preston, has just been entirely rebuilt, at the cost of £10,000, from the designs of Mr. Ewan Christian. It is Gothic in style, and is seated in oak for 700 worshippers.

The annual meeting of the National Association of Builders and Contractors of Great Britain will be held at Southampton on the 23rd inst. The proceeding will take place at the Hartley Institution, by permission of the Southampton Corporation.

The small building in Aston-lane, Birmingham, which has been used as a place of worship for the Wesleyan body at Perry Barr, is to give way to a new and larger chapel. Recently the trustees adopted the plans of Mr. T. Guest, Corporation-street, Birmingham, for a building in the Early English style, to be erected in front of the present chapel (which will form a school), at a cost of about £1,600. The work was placed in the hands of Mr. J. Simons, of Aston, and a series of memorial stones were laid on Monday. The chapel will have red brick facings and Bath-stone dressings. Accommodation will be provided for 400 persons. Exclusive of the chancel, which will have an octagonal end and traceried windows, the building will measure 54ft. by 37ft.

At a meeting of the committee of management of Nottingham University College, Mr. William Robinson, M.E., Senior Demonstrator in Electrical Engineering and Applied Physics, and chief assistant to the principal of the City and Guilds of London Technical College, Finsbury, was unanimously elected Professor of Engineering.

A new pulpit in carved oak, also sanctuary railing, carved pedestals for statues, and brass altar-lights, &c., have been added to the Roman Catholic Church of St. Joseph, Burwash. This work has been executed by Messrs. Jones and Willis, of London and Birmingham, from designs and drawings of Mr. Bernard Whelan, the architect to the church.

At a second meeting of the Bishop Parry Memorial committee, held on Wednesday at Lambeth Palace, Mr. James Forsyth, sculptor, exhibited a clay model of a recumbent figure, and various plans for a base. Suggestions were made as to slight alterations in the figure and to the subjects to be represented on the base. The latter were all unanimously agreed to. The effigy is to be placed in the nave of Canterbury Cathedral, and to the west of the recumbent figure of Archbishop Sumner. The monument is to cost £1,000.

Our Office Table.

THE new Art Gallery of the City Corporation adjoining the Guildhall is now open free daily from 10 to 6, and contains a remarkable and interesting loan collection. The pre-Raphaelites are well represented—Dante Gabriel Rossetti by the well-known "Sibylla Palmifera" and "The Beloved"; Ford Madox Brown by his realistic "Work" and "Don Juan Discovered by Haidée"; Holman Hunt by "Two Gentlemen of Verona," "The Triumph of the Innocents," and "Isabella and her Basil Pot"; and Burne-Jones by the "Chant d'Amour." Millais only appears as a landscape painter; but one of the two works is "Chill October," the other "The Meeting of the Waters." Sir Frederic Leighton's "Alcestis," G. F. Watts's portraits of William Morris and the Marchioness of Granby, J. F. Lewis's "Lilium Auratum," and Briton Riviere's "Daniel in the Lions' Den" are well worthy of a visit; while among other contemporary painters represented are Vicat Cole, Peter Graham, Hook, Williams, Leader, Goodall, Brett, and Faed. Works by Hogarth, Reynolds, Lawrence, Landseer, David Roberts, Maclise, and Holl are also hung, as well as a few by the Old Masters, including the "Christ at Gethsemane," by Raphael, lent by the Baroness Burdett-Coutts, and examples of the Dutch School from the Northbrook collection. The loan exhibition will be kept together till August 31st.

THE prize list at University College, London, for the classes of architecture, conducted by Professor T. Roger Smith, F.R.I.B.A., is as follows:—In the Fine Art branch the Donaldson Silver Medal is taken by C. C. Brewer, of Finchley, and the second prize by Kotaro Sakurai, who, as his name suggests, is a Japanese student. Alfred Hale, of Birmingham, is placed third, and receives a certificate, having obtained the number of marks qualifying for a prize. The second class is headed by F. K. Kendall, of Blackheath; and the third class by R. M. Whellock, of Nunhead. Kotari Sakurai also carries off the prize for Sketches, and the Donaldson Silver Medal in the branch of Construction. In this branch F. J. Slater, of London, takes the second prize, and T. A. Brooks and E. B. Hoole, both of London, are placed in the second class. The prize in the modern practice branch goes to Louis Jacob, of New Cross; Dendy Watney, of Croydon, who obtained the number of marks qualifying for a prize, receiving a certificate, and H. R. Appelbee and H. Helsdon, both of London, being named in the second class.

MEETINGS FOR THE ENSUING WEEK.

SATURDAY (TO-MORROW).—St. Paul's Archæological Society. Visit to Coventry. Train from Euston 9 30 a.m.

TUESDAY.—Royal Society of Antiquaries of Ireland. Meeting at Athlone.

SATURDAY, JULY 19.—Association of Municipal Engineers and Surveyors. Home District Meeting at Croydon. Assemble at public baths in Birchanger-road, near Norwood Junction, 11 a.m.

Glasgow Architectural Association. Visit to Kinning-park R.C. Church, Fairfield offices, and Govan Chapel.

Architectural Association, 9, Conduit-street, W.—The Visit to Holland House will be made on July 26. Names to be sent to Mr. Owen Fleming, with 1s., as announced in *A.A. Notes* for July.

FRED. R. FARROW. } Hon. Secs.
ERNEST S. GALE. }

Sir Benjamin Baker has accepted the post of engineer to the Watkin Tower Company.

On Saturday the foundation stone of St. George's Church, Westcombe Park, was laid. The church, which is situated in the Glenluce-road, is being built from the designs of Messrs. Newman and Newman, of Tooley-street, by Messrs. Balaam Brothers, of the Old Kent-road. The style is Early French, the walls being of red brick with Bath-stone dressings. The cost of the first section, consisting of four bays of the nave, with parish-room beneath, will be £5,100. The total cost of the church when completed with nave and side aisles, tower, and spire, is estimated at £8,500. The portion now being built will seat 600 people.

On Tuesday week the memorial-stones were laid of a new Wesleyan chapel and Sunday-school at Downderry, Liskeard. The erection of the buildings is being carried out by Mr. T. E. Madams, from designs by Mr. H. J. Snell, architect, of Plymouth.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

AUDENSHAW.—For sewering, paving, flagging, and kerbing Pitt-street. Mr. J. H. Burton, Ashton-under-Lyne, surveyor:—

Hayes, P. D. & S. D., Stockport...	£1,243 5 3
Neal, W., Ashton-under-Lyne ...	1,175 5 7
Stirling and Swann, Manchester...	1,149 16 1
Brierley, J. W., Ashton-under-Lyne ...	1,143 6 9
Garside, Barnes, & Co., Stalybridge	1,110 18 7
Underwood Bros., Dukinfield ...	1,094 4 1
Worthington and Pownall, Manchester (accepted)...	1,038 16 1

Surveyor's estimate, £1,080 0s. 7d.

AUDENSHAW.—For sewering, paving, flagging, and kerbing Harrop-street. Mr. J. H. Burton, Ashton-under-Lyne, surveyor:—

Hayes, P. D. and S. D., Stockport ..	£185 15 1
Neal, W., Ashton-under-Lyne ...	181 17 0
Stirling and Swann, Manchester ...	178 10 1
Brierley, J W., Ashton-under-Lyne	171 7 4
Garside, Barnes, & Co., Stalybridge	164 19 9
Underwood Bros., Dukinfield ...	164 2 3
Worthington and Pownall, Manchester (accepted) ...	157 19 8

Surveyor's estimate, £162 18s.

AUDENSHAW.—For paving, flagging, and kerbing Nelson-street. Mr. J. H. Burton, Ashton-under-Lyne, surveyor:—

Hayes, P. D. and S. D., Stockport...	£173 14 1
Neal, W., Ashton-under-Lyne ...	165 16 8
Garside, Barnes, & Co., Stalybridge	160 0 2
Brierley, J. W., Ashton-under-Lyne	159 11 3
Stirling and Swann, Manchester ...	154 6 2
Underwood Bros., Dukinfield ...	151 18 6
Worthington and Pownall, Manchester (accepted) ...	143 14 3

Surveyor's estimate, £148 2s. 3d.

BATTERSEA, S.W.—For supplying heating apparatus on the low-pressure hot-water system to a school now in course of erection on the Latchmere site, Battersea Park-road; also for extending the apparatus to the graded school, for the London School Board:—

Phipson, W. W.	£1,150 0 0
Wagstaff, J. G...	961 0 0
Longden and Co.	866 10 0
May, J. and F.	862 0 0
Kinnell, C. J., and Co.	850 0 0
Rosser and Russell	764 10 0
Wontner Smith, Gray, J., and Co....	759 0 0
Purcell and Nobbs (accepted) ...	634 0 0

BIRMINGHAM.—For alterations to premises, Edmund-street, for Messrs. A. Field and Co. Messrs. J. A. Cossins and Peacock, architects. Quantities by Mr. G. Kenwick:—

Smith, J., and Sons (accepted) ...	£553 0 0

BLACKFRIARS.—For recent new stabling and cart shed; also alterations and repairs at The Rotunda, Blackfriars-road, for Messrs. A. Levey and Co., brewers, Dover and London. Messrs. Dunk and Bousfield, 9, Billiter-square, E.C., architects and surveyors:—

Colls and Sons	£1,300 0 0
Rider and Son	1,281 0 0
Stiff, Dover	1,030 0 0
Munday, G., and Sons	936 14 0

COLWYN BAY, NORTH WALES.—For the pulling down, removal, and re-erection—with additions—of gymnasium, greenhouses, &c., Rydal Mount, Colwyn Bay, for Mr. T. G. Osborn, M.A. Mr. T. E. Lidiard-James, Lonsdale Chambers, 27, Chancery-lane, London, architect:—
Foulkes, E., Colwyn Bay (accepted).

COLWYN BAY, NORTH WALES.—For additions to Rydal Mount, for Mr. T. G. Osborn, M.A. Mr. T. E. L. James, Lonsdale Chambers, 27, Chancery-lane, London, architect. Quantities by Messrs. Evans and Deacon, Charing Cross, S.W.

	A.	B.
Shillitoe, J., and Sons, Bury St. Edmund's	£5,875	£200
Herbert, T. and H., Leicester	5,598	225
Gabbutt, E., Liverpool	5,592	234
Foster and Dicksee, Rugby...	5,555	222
Parry, S., Llanrwst	5,498	285
Foulkes, E., Colwyn Bay	5,350	350
Gethin, J., Shrewsbury	4,950	175
Jones, J. B., Llanwrst	4,800	178

A.—Main building. B.—E.C. block.

EALING.—For the enlargement of superintendent's lodge, erection of a cottage and sundry works at Ealing Cemetery, for the Ealing Burial Board. Mr. R. Willey, F.R.I.B.A., 66, Ludgate Hill, E.C., architect and surveyor:—

Nightingale	£1,775 0 0
Jones	1,753 0 0
Knight...	1,700 0 0
Myring	1,640 0 0
Penny and Co.	1,630 0 0
Nye	1,446 0 0
Down	1,428 0 0
Dorey	1,385 0 0

ENFIELD.—For the new church of St. Mark, Bush-hill Park (exclusive of south aisle). Messrs. J. E. K. and J. P. Cutts, 28, Southampton-street, Strand, W.C., architects:—

Patman, L. and W. D., Enfield ...	£3,975 0 0
Fairhead, A., and Son, Enfield ...	3,650 0 0
Bently, J., Waltham Abbey (late)	3,498 0 0
Porter, A., Tottenham	3,487 0 0
Taylor and Son, Holloway ...	3,477 0 0
Tyerman, J., Walworth* (corrected amount)	3,399 0 0

* Accepted with deductions.

EXETER.—For sanitary alterations, &c., at the West of England Eye Infirmary. Mr. C. Cole, Queen-street Chambers, Exeter, architect:—
Plumber's work:—Hubber and Son.
Mason's work:—Scadding and Son.
(No competition.)

EXETER.—For general repairs and alterations at the Queen's Head p.h., for Messrs. Ross and Pidsley. Mr. C. Cole, Queen-street Chambers, Exeter, architect:—
General work:—Ham and Passmore (accepted)
Painter's work:—Down, J.
(Lowest tenders received.)

EXETER.—For sanitary alterations at the Exeter Bank. Mr. C. Cole, Queen-street Chambers, Exeter, architect:—
Tree and Bolley (accepted).

EXETER.—For new stabling, &c., at the Three Tuns p.h., for Messrs. Ross and Pidsley. Mr. C. Cole, Queen-street Chambers, Exeter:—
Heath and Smith (accepted).
(Lowest tenders received.)

EXETER.—For sanitary alterations at St. Leonard's Lawn. Mr. C. Cole, Queen-street Chambers, Exeter, architect:—
Sharland, T. (accepted)
(No competition.)

FORFAR, N.B.—For hydraulic ram and piping for water supply to South Leckaway Farm, for the Earl of Strathmore. Mr. J. A. Ferguson, Glamis, surveyor:—
McBeth and Milne, Forfar (accepted).

GLAMIS, N.B.—For porch and repairs to house at Upper Hayston, for the Earl of Strathmore. Mr. J. A. Ferguson, Glamis, architect:—
(Accepted tenders.)
Mason:—Johnston, J., Glamis.
Joiner:—Johnston, G., Glamis.
Plumber:—Langlands, D., Forfar.
Painter:—Martin, J. D., Kirriemuir.

GUILDFORD.—For the erection of a new golf-house Merrow Downs, Guildford, for the Guildford Golf Club Mr. A. J. Sturges, architect:—

Mitchell Bros., Shalford	£1,896 0 0
Ellis, S.	1,670 0 0
Milton, F., Witley	1,646 0 0
Smith, R.	1,549 0 0
Strudwick, G....	1,539 0 0
Garnett, G.	1,513 0 0
Kingerlee, T. H., Oxford	1,495 0 0
May, P. C.	1,478 0 0
Wood, R.	1,439 0 0
Downes, T. E. (accepted)	1,369 0 0

Rest of Guildford.

HANWELL.—For alterations at the Central London District Schools, Hanwell, for the managers. Messrs. F. Jarvis and Son, architects:—

Brass and Son	£13,550 0 0
Stimpson and Co.	12,940 0 0
Flew and Co.	12,700 0 0
Kirk and Randall	12,650 0 0
Gibson, Southall	12,385 0 0

HEREFORD.—For laying down new system of drainage at the Working Boys' Home, Hereford. Mr. C. H. Goodsell, 20, East-street, Hereford, architect and surveyor:—
Andrews, R. (accepted).

HERTFORD.—For new station hotel, Hertford. Mr. J. Farley, Hertford, architect. Quantities by Mr. T. J. Pietersen, 191, Euston-road, London:—

Harris and Wardrop, London ...	£2,700 0 0
Faulkner, J. W., London	2,095 0 0
Dove, H. M., Watford	2,030 0 0
Hunt, T., Ware	1,990 0 0
Norris, H., Hertford	1,963 0 0
Miskin, C., St. Alban's	1,963 0 0
Hunt, J. A., Hoddesdon	1,950 0 0
Kirk and Randall, Woolwich ...	1,941 0 0
Claridge and Bloxham, Banbury...	1,897 0 0
Wallis, G. E., & Sons, Maidstone	1,888 0 0
Bell, W., & Sons, Saffron Walden	1,867 0 0
Halliday, S. F., Stamford	1,862 0 0
Pattinson, S. and W., London ...	1,850 0 0
Wilmott, J., and Sons, Hitchin ...	1,800 0 0
Dupont, F., Colchester	1,793 0 0
French and Ellwood, Sandy ...	1,746 0 0

HORLEY.—For the erection of six shop-fronts, offices &c., in High-street, Horley, for Mr. W. E. Challis, West street, Horsham, architect:—

Brown, J. (accepted)	£300 10 0

ISLINGTON.—For alterations, fittings, &c., at the Four Islington-green, N. Mr. R. J. Lovell, 46, Queen Victoria street, E.C., architect:—
Ivory (accepted)

KILBURN, N.W.—For providing new boiler for the existing low-pressure steam apparatus at the Netherwood street School, Kilburn, and for extending this apparatus to the enlargement (now in course of erection), for the London School Board:—

Potter, T., and Sons	£861 0 0
Wontner Smith, Gray, J., and Co....	760 0 0
Green and Son, Ltd.	666 0 0
Purcell and Nobbs	664 0 0
Grundy, J.	597 0 0
Rosser and Russell (accepted) ...	575 0 0

LEE, KENT.—For additions to the Hedgley-street Public Schools. Messrs. J. E. K. and J. P. Cutts, 28 Southampton-street, Strand, W.C., architects:—

Turtle and Appleton, Clapham Junction	£1,568 0 0
Nightingale, B. E., Albert Embankment (accepted)	1,508 0 0

LEOMINSTER.—For alterations and additions to Upper Hill School Church, near Leominster, Herefordshire. Mr. C. H. Godsell, 20, East-street, Hereford, architect and surveyor:—

Griffiths, J.	£148 18 0
Fox, J.	110 15 0
Davies, J. J. (accepted)	98 10 0

LONDON.—For erecting St. Matthew's Church-room Warwick-road, Upper Clapton, for the building committee Messrs. Mitchell and Butler, architects:—

	A.	B.
Williams, G. S. S. and Sons	£2,555 0 0	£140 0 0
Scrivener and Co. ...	2,306 0 0	129 0 0
Morter, J.	2,264 0 0	139 0 0
Anley, J.	2,230 0 0	125 0 0
Cox, C.	2,227 0 0	121 0 0
Coldwell and Sons ...	2,216 0 0	124 0 0
Chesham and Sons...	2,2 0 0 0	139 0 0
Roome, E.	2,101 0 0	103 0 0
McCormick & Sons*	2,099 0 0	98 0 0

*Accepted.
A.—Building. B.—Boundary walls, gates, &c.

LONDON.—For new showrooms at Dorset Works, Eas road, City-road, for Messrs. Dottridge Bros. Mr. A. C Collins, 52, Finsbury-pavement, E.C., architect:—

Roome, E. A.	483 0 0
Nixon, T.	445 0 0
Godfrey, J., and Son, Clapton* ...	444 0 0

* Accepted.

LONDON.—For lowering basement floor, new buffet, an lavatories, and various alterations at 122, Newgate-street E.C., for Messrs. Diviani Bros.:—
Williams, H. J., Bermondsey-street £837 10 0
(No competition.)

LONDON.—For sundry alterations and repairs to Nos. and 4, Evelina-road, Peckham, S.E. Mr. F. G. Grierson 9, Old Jewry Chambers, E.C., architect:—
Hollingsworth, H. H., High-street, Peckham.

LONDON.—For the supply of drawing desks of an improved pattern to the schools of the London School Board

	No. 1 size. Each.	No. 2 size. Each.
Hammer, G. M., and Co....	£2 0 0	£2 0 0
Davis Bros.	1 15 0	1 13 6
Illingworth, Ingham, & Co.	1 12 6	1 12 6
Cruwys, T.	1 12 0	1 12 0
Chamberlain, J.	1 7 6	1 10 6
Taylor and Co., Driffield...	1 0 0	1 0 0

* Accepted.



T·S·ROBERTSON·
PRESIDENT·OF·THE·DUNDEE·INSTITUTE·OF·ARCHITECTURAL·SCIENCE·& ART·



HE
PRES·OF·THE·LEEDS



S·F·CLARKSON·FRIBA
PAST·PRESIDENT·OF·THE·ARCHITECTURAL·ASSOCIATION·



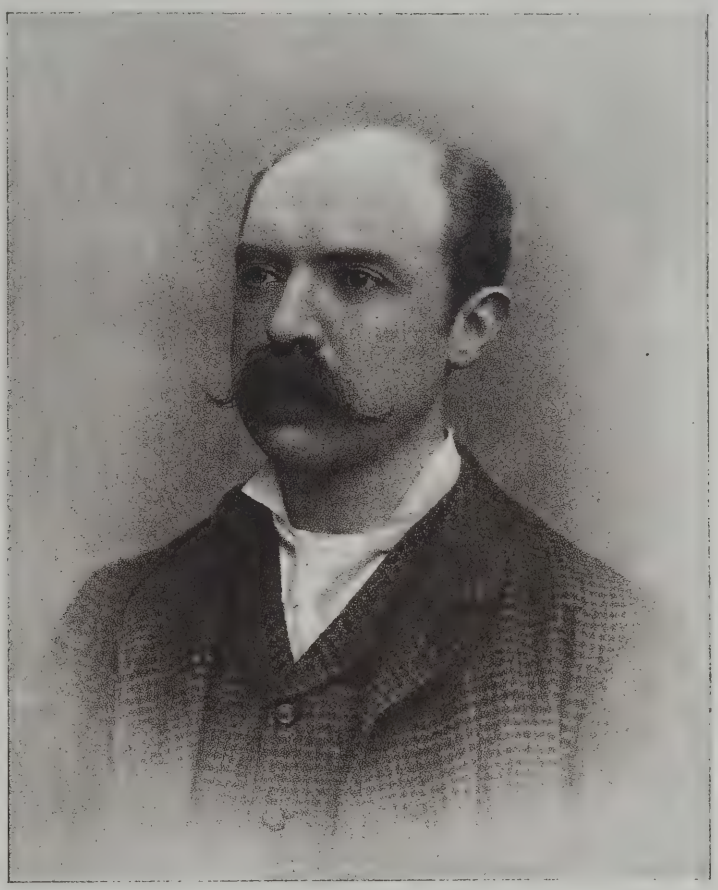
E·J·T
ARCHITECT·OF·

CONTEMPORARY



Henry Perkins

ECTURAL SOCTY



Edw. W. Mountford

EDWARD W. MOUNTFORD F.R.I.B.A.
ARCHITECT OF THE NEW MUNICIPAL BUILDINGS SHEFFIELD



ward J. Tarver

F.B.A
SUSSEX.



Walter G. Penty

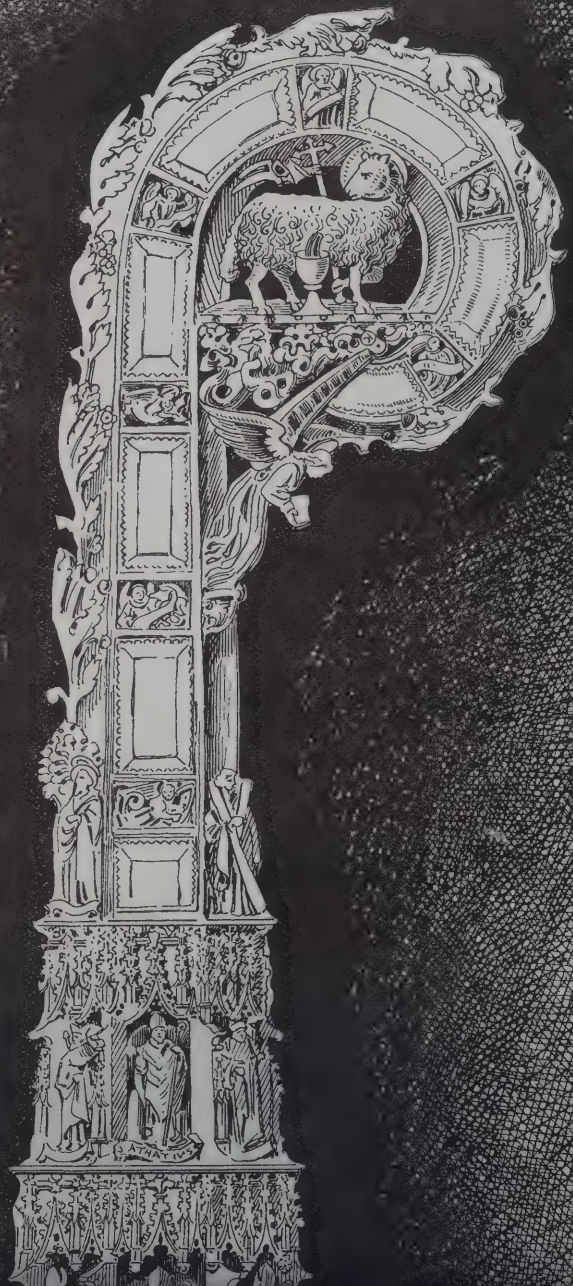
WALTER G. PENTY F.R.I.B.A.
PRESIDENT OF THE YORK ARCHITECTURAL ASSOCIATION

"PHOTO-TINT," by James Akerman, 7 Queen Square London W.C.

TWO CROZIERS



working drawing of Design for the CONNECTICUT PASTORAL-STAFF



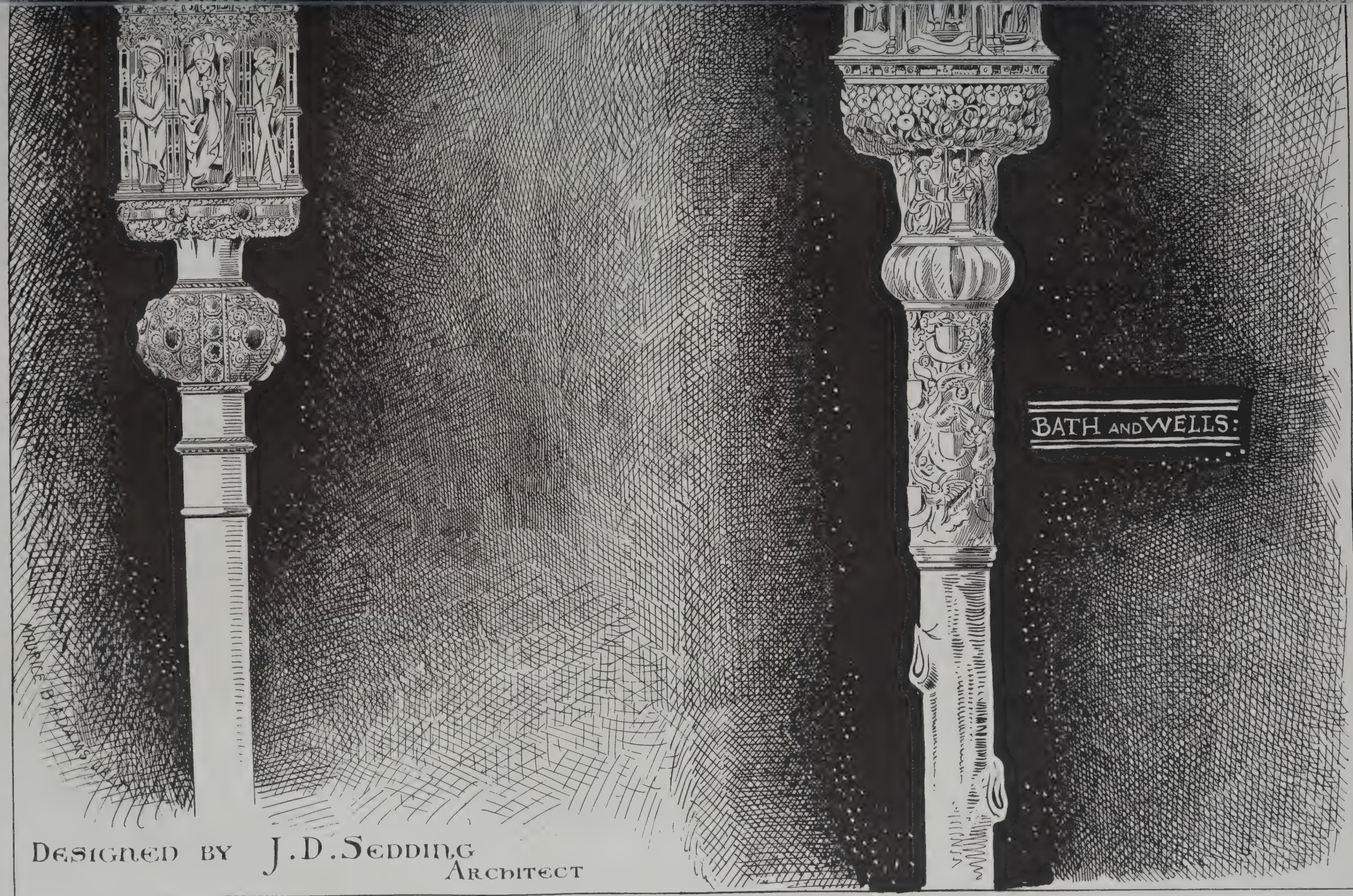


Photo-Lithographed & Printed by Lowe, Ackerman & Queen Square, W.C.

NEW MUNICIPAL BUILDINGS
SHEFFIELD

Elevation to Surrey Street

Scale 16 ft. to one inch



Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

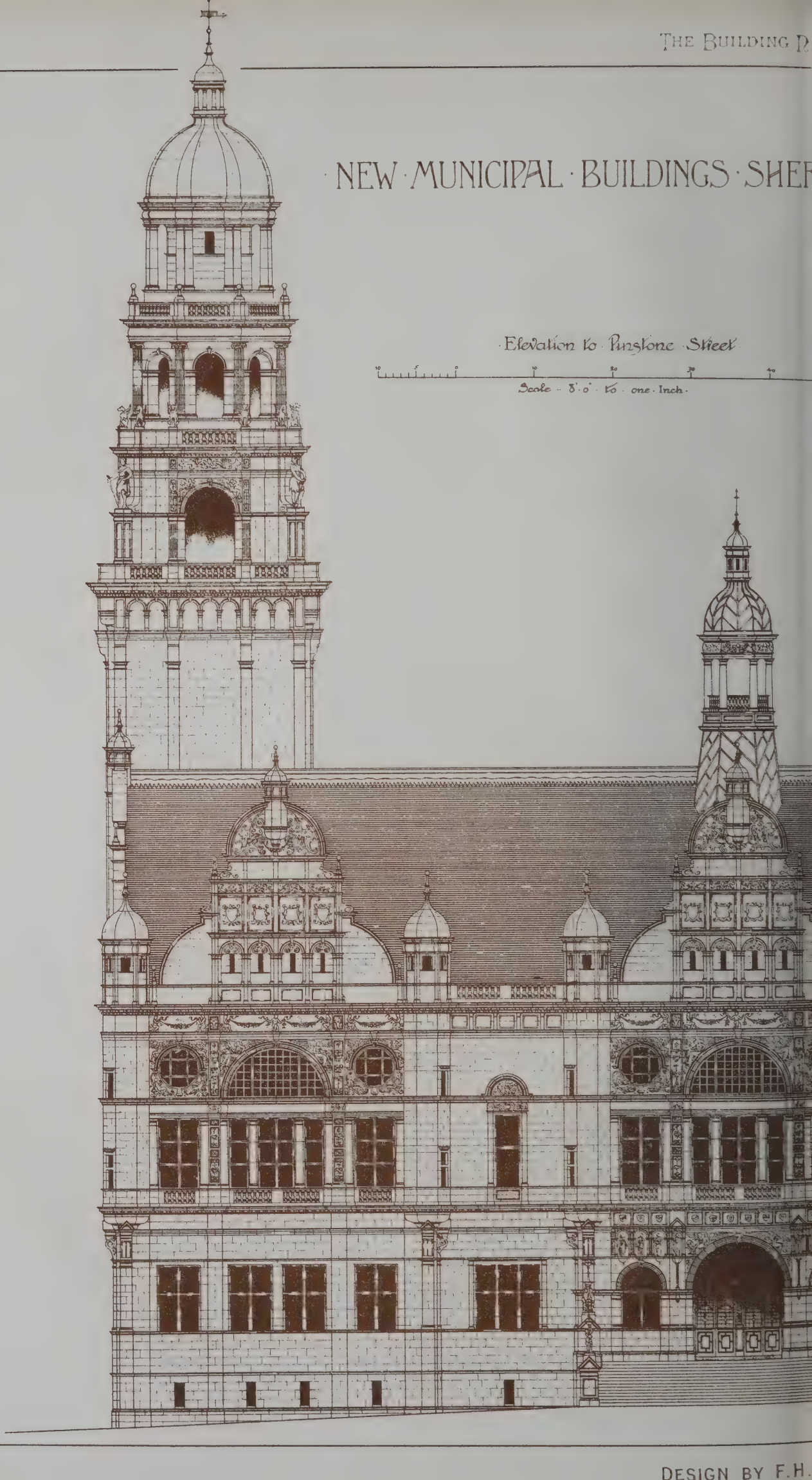


PREMISES LUDGATE HILL, E.C. for MESSRS HUDSON BROTHERS

Messrs J.W. & R.F. Beaumont Archts
73 Queen Victoria Street E.C.
and 40 St James' Square Manchester

Photo-Lithographed & Printed by Land

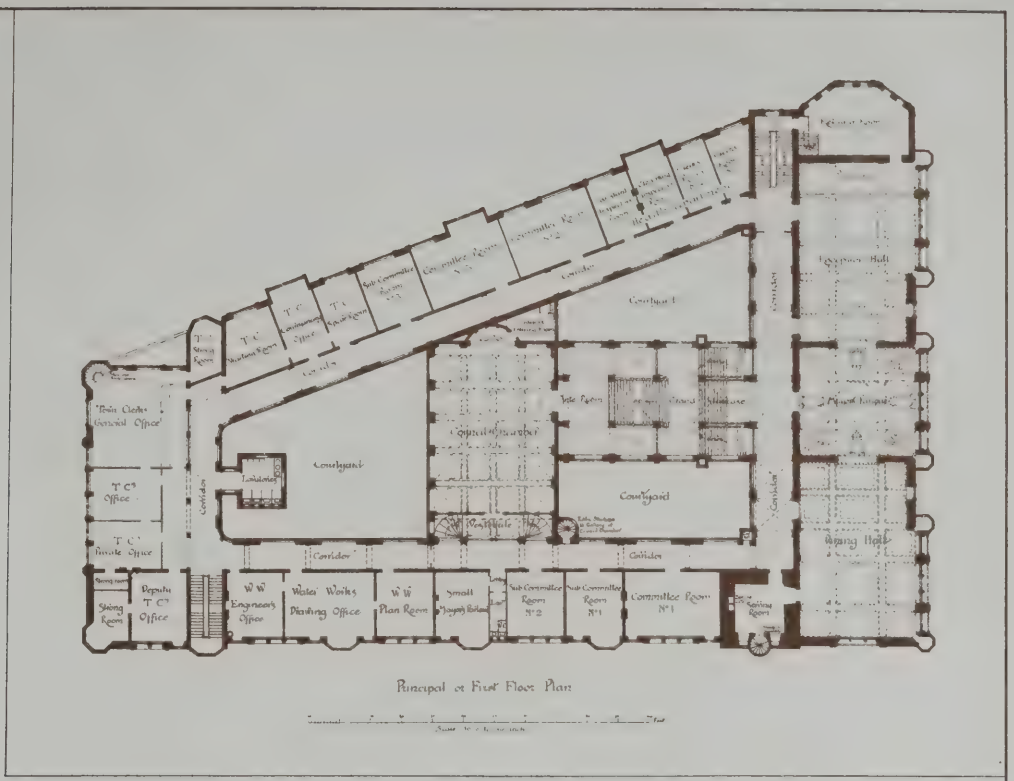
NEW MUNICIPAL BUILDINGS SHEF

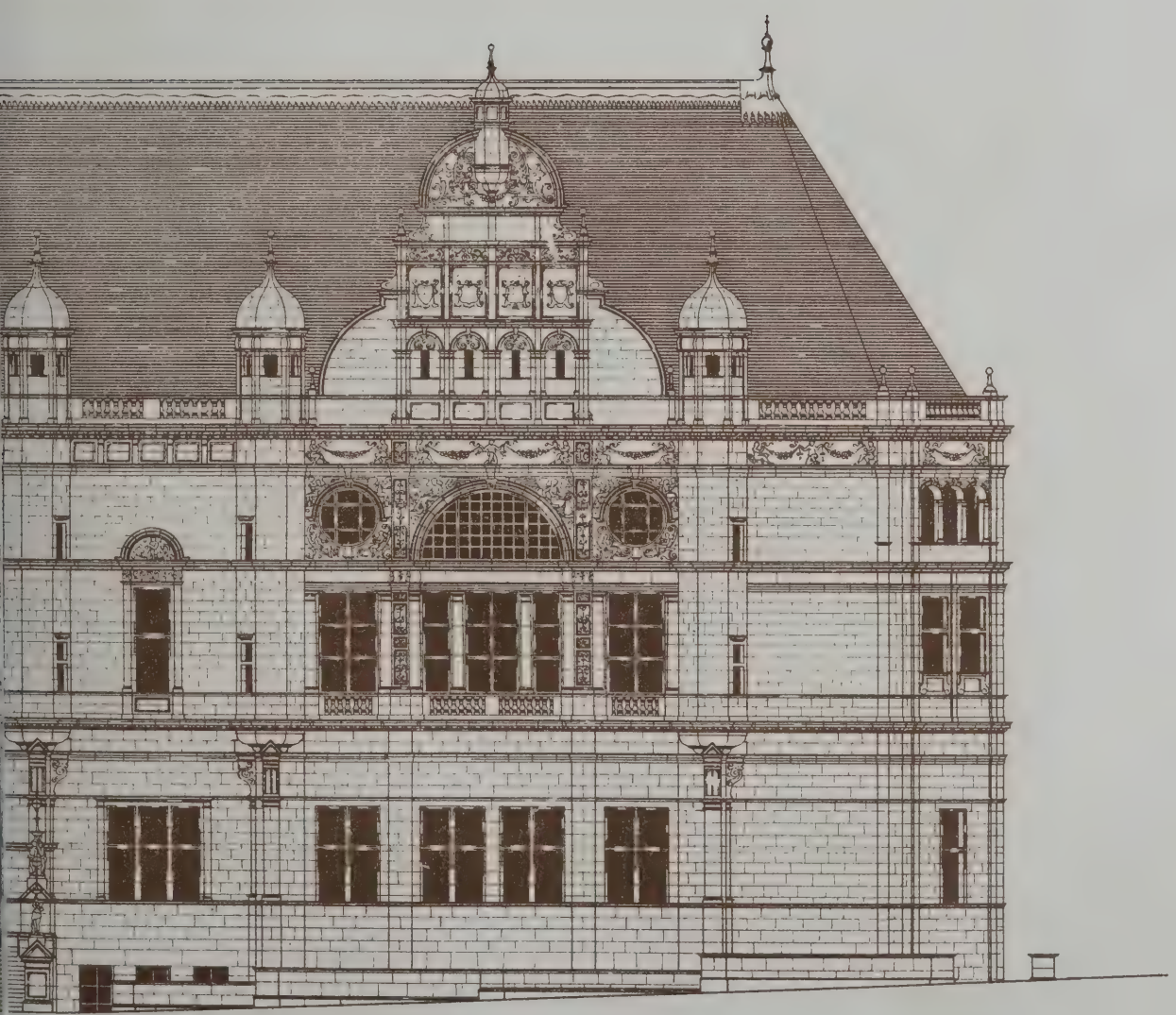


Elevation to Pingstone Street

Scale - 8'-0" to one Inch

ELD ·





OCH. A.R.I.B.A.

Photo Lithographed & Printed by James Akerman, 6, Queen Square, W C

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LIX.—No. 1854.
FRIDAY, JULY 18, 1890.

SKILFUL ARCHITECTURE.

PROBABLY the greater number of successful buildings have been the result of fortuitous circumstances—either a happy hit, or a leisurely solution of the problem. In these days of high-pressure, competition, and contract, the possibilities of a particular design for any structure can seldom be compassed; the architect has no time, if he is in a large practice, to study the problem of plan; he cannot, for instance, make a number of studies for a certain site, and revert to them at intervals of leisure to improve and develop; but is, perforce, obliged to speedily fix upon one idea and work it out. The contract drawings cannot wait for modification and improvements; but must be commenced forthwith, even before the idea has been digested, and often while another and happier conception crosses his mind. These afterthoughts, often simpler and happier modes of dealing with the problem, prey upon an uneasy mind, willing to adopt the most advantageous course, but unable to entertain it for a moment. The first idea, crude though it be, is drawn to scale, and its shortcomings grow more apparent and aggravating. If the design be for a competition, it is not long before the author is made aware of the weakness of his scheme. Some other competitor has hit upon a plan that is obviously better than his own, and he has to endure the mortification of having been beaten in the contest. Whatever may be its drawbacks, this is one of the undoubted advantages secured by competition. Out of several competing designs, one or more is likely to come within a measurable distance of the mark.

A chief cause of the failure of so many designs, prepared with infinite trouble and labour, is the not knowing What and How to provide? Only a few architects master the requirements of particular buildings—the very first step that can insure success. What can a man practised in ordinary house-building know of the requirements, say, of a hospital or a union workhouse ward? He may be a good architect, and have designed villas and churches and schools, but he knows absolutely nothing of the regulation types of hospital construction. And yet we find men who throw in their chances against experts in buildings of this kind, and wonder how it happens they do not win against Mr. So-and-So, a Local Government Board official, or Mr. Smith, whose skill and experience of such buildings have made him a very successful competitor for hospitals and infirmaries. Mr. Turn-his-hand-to-anything, architect, has so firm a conviction in his own power that he scruples not to engage in conflict with such specialists; but the odds are against him. His plan is laboured, the evidence of patient, plodding toil by the combined aid of Blue-book instructions, designs from the professional journals, and oil-lamps; Mr. Smith's plan is simple, straightforward, and masterful in its arrangement of requirements. One is a roundabout, intricate, confused plan, indicating a mind that cannot grasp the essentials. It shows plenty of "beating about the bush," all to little purpose: the other deftly hits the mark; it goes straight to the solution without bewildered effort, while the whole simplicity of its lines show that the author possessed the secret—the key to the problem. He had, in short, mastered the requirements of the design. And this kind of masterly knowledge assimilates genius. One who has made himself master of a problem, who knows what is necessary and what non-essential, has the power to present it in a light which the uneducated cannot do by groping about in a maze of uncertainties. Therefore we say that an architect who has imperfectly acquired the essentials of any class of building is unable to present his ideas in any other than a confused form.

One indication of this power is the ability to grasp the main parts of a design. Does the building shape itself to the ground? Do the lines of the principal departments locate themselves well on the site? Are the axes of the main apartments arranged to give effective grouping and outline? These are a few of the leading marks of successful architecture. Let us look, for example, at the designs for the Sheffield Municipal Buildings, the site for which is trapezoidal in shape, and see how these principles are illustrated. There were clearly two methods of planning the structure: first, to make the walls parallel to the principal boundaries, and the cross walls at right angles thereto; second, to place them on the square, thus sacrificing triangular spaces on the oblique or Cheney-row boundary. Mr. E. W. Mountford, in his able design selected by Mr. A. Waterhouse, and illustrated by us (June 27), has chosen the latter alternative: his apartments are all square. Whatever may be the merits of the other premiated designs, there is no doubt that the designs of Mr. Mountford and Mr. Hare exhibit, in selecting the rectangular principle of planning, decided advantages. As three of the four sides of the quadrangle are on the square, unlike the triangular Manchester Town Hall site, the architects were justified in adopting this principle, and they have thereby emphasised in the external design the principal departments; thus the council chamber and the mayor's suite of apartments towards Pinstone-street are pronounced portions of the design set square. These latter rooms can be thrown into one grand hall. Another axiomatic principle is illustrated in the accepted plan; the two main entrances and corridors are arranged at right angles, and intersect in an octagon near the Cheney-row side. The author has evidently designed his elevations as outgrowths of the plan. Less apparent is the position assigned to the angle tower, which would more naturally have been placed over one of the main entrance halls. It looks a little like an interpolation; but the author assigns a good reason for putting it at the corner—namely, that it should forcibly strike the eye at the corner of the two main streets. It certainly aids the perspective, and separates the two fronts. Looking at the plan again, the apartments shape themselves fairly well to the site; their axes are simply arranged, the main ones parallel to the shorter street. Mr. Hare's plan is equally clever; perhaps in its general location of apartments it illustrates more forcibly the principles we have mentioned. We find that the author's general idea, the key-note of the whole design, is the position assigned to the general offices of the borough accountant and waterworks department. These offices being large, they are placed in the centre of building, and are top-lighted. Their main axis is central and transverse, and coincides with that of the council-chamber above. The light areas are well distributed; the corridors and halls are happily planned for internal effect—their axes are straight and at right angles. Looking at the main apartments of the principal floor, we find that their lines locate themselves well; the alignment of offices is easily followed. Mr. Tulloch's design, which we have also illustrated, shows the second principle of planning, the walls of the oblique side running parallel thereto, but the author has skilfully arranged his main blocks; these are placed at right angles to the long front. There is the state apartment block, the council-chamber and borough accountant block, and the general office block at the short side. Between the two first a transverse block in the centre connects them, leaving two courtyards for light. This is the scheme. The lines of walls are straight, and the blocks tolerably emphasised externally.

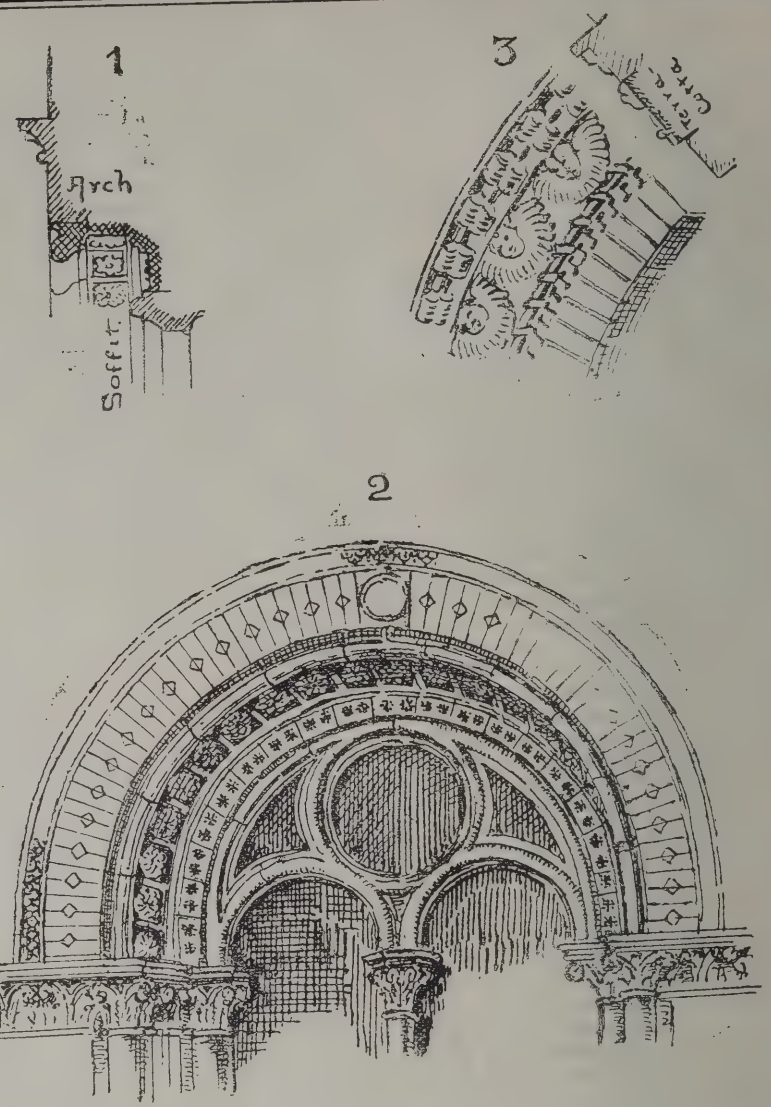
Now it is precisely this arrangement and grouping of the departments, this orderly marshalling of chambers and offices, that distinguishes the skilful from the unskilful designs. The design of great buildings like the Palace of the Legislature, the Law Courts, St. George's Hall, Liverpool, Manchester Town Hall, and many others, show that all the talent and skill consist in arranging and grouping together certain blocks of building more or less decorated into one harmonious assemblage. The details may be good or indifferent. This way of looking at architecture does not commend itself to those who think it immaterial how the parts are put together so long as they give attractive elevations. Nevertheless, it is one of the indubitable marks of ability and skill. A skilful author marshalls and groups his facts, throws his ideas into some order, and presents them to the reader in as simple and telling a form as possible. What is true of the word-painter is also true of the artist in fiction, dramatic plots, in painting, and sculpture. He seeks to gather his ideas into a few telling expressions, plots, or touches—the simple or more striking the better. But the unskilful plods and blunders: he takes an indirect way of appealing to the mind or the emotions; his expressions are clumsy and awkward, his plots without point or life, his touches feeble and untelling.

When we hear of more architects "patenting" their arrangements, as was the case with one firm in the Sheffield competition, an improvement in design may be hoped for. Uncertainty and feebleness appear to be the prevailing qualities of architectural design. A plan is begun before a deliberate choice has been made of the right principle. Too much has been left to luck and good fortune, too little to skill and knowledge of the requirements. Can we wonder that competition work is so often confused, without a scheme, and purposeless? Anything is often sent in for a plan which just satisfies the instructions; no attempt is made to dispose or adjust the parts: the consequence is a design marked by indecision, bewildering and incoherent plans and elevations. One other indication of skill in the design of buildings is that of simplicity and ease. A good design can always be apprehended easily: the mind and eye quickly comprehend the disposition; there is no confusion or intricacy, so noticeable in laboured and unskilful art. This is one of the hardest maxims to learn by the novice and unskilled architect. They think the more show and display of artifice, complication of arrangement, and intricacy of detail, the better. The idea is that the art of impressing the beholder is first to bewilder him, and next to captivate him by lavish ornament or attractive draughtsmanship. The *ruse* too often succeeds with ill-informed and unthinking spectators. Tower and dome, elaborate sky line, innumerable breaks, and redundant detail are mistaken for architectural skilfulness or beauty. The true artist, on the other hand, has the art of making these fall into their natural places, of knowing where to accentuate his design by the more impressive features, and where to produce quietness and rest in another part. The true aim of art being to "conceal art," the whole of a complex structure is simplified and reduced to a few leading features and groups; a kind of abstract is made of the several parts and

details; the masses, outlines, and features are regulated to a sort of rhythm which, while it impresses, does not distract the eye.

SETTING-BACK HOUSES IN NEW STREETS.

AN interesting question was raised the other day in the Queen's Bench Division, before Lord Coleridge and Mr. Justice Wills, respecting the application of a builder to erect a house in a new street at Middlesbrough. A plan was first sent in which showed the house set back 30ft., in a line with two houses in an old road which was a continuation of the new street; but afterwards he altered his mind, and sent in another plan showing the house not set back, which the corporation disapproved of. Thereupon the builder applied for a *mandamus* to the corporation to approve the plan. It was in answer to this writ that the corporation had to deal. Under the Act of 1888 there is an enactment to amend Section 156 of the Public Health Act, which runs as follows:—"That it shall not be lawful in any urban district, without the written consent of the urban authority, to erect or bring forward any house or building in any street, or any part of such house or building, beyond the front main wall of the house or building on either side thereof in the same street, nor to build any addition to any house or building beyond the front main wall of the house or building on either side of the same." The street at Middlesbrough had only a few houses at considerable distances apart, and the question was how the above provision applied in such a case, or to any new street. From the particulars before us, it appears that the corporation had laid out the new street on one of the main approaches to the town, which they desired to keep as spacious as possible. The old by-laws of the town provided for a width of street of 48ft. In the older part of the road there are one or two houses set back 30ft.; but in the new street there was only one house built at that distance back, and it was 800ft. away from the proposed house, another in the old road was set back 70ft., and this was 400ft. away. The question was whether these houses could be taken as a guide, or as controlling the line of any new house. The amended enactment we have quoted appears to make it clear that they must be taken as defining the limit; for it says distinctly it shall not be lawful to erect or bring forward any house "beyond the front main wall of the house or building on either side thereof," clearly implying that if there is only one house on either side, and however far off it may be, it should determine the line. On the part of the builder it was argued that these were different streets, one 40 years old, and one quite new, with only one or two houses built in it, and that the nearest of them was 800ft. distant; the other was set back 70ft. Mr. Justice Wills said if the corporation were justified in requiring the house to be set back 30ft., they might as well require it to be set back 70ft. The Court decided that the new road was not yet a street, and there were no houses on "either side of it," so that the enactment did not apply. The *mandamus* must therefore issue. The decision turned on the moot question, "What is a street?" which, until it is authoritatively settled, will give builders in newly-formed streets the right to defy the urban authorities. The point therefore is of great importance in the new districts of towns, and it is one which requires some amendment in the Act to meet the difficulty. It comes, in short, to this: that until a thoroughfare or road becomes a "street," the houses on either side, if few and scattered, do not determine the line of frontage. The meaning of the term street legally under the Public Health Act, "includes any highway (not being a turnpike road) and any public bridge (not being a county bridge) and any road, lane, footway, square, court, alley, or passage, whether a thoroughfare or not," a remarkable definition and of extraordinary latitude. The legal definitions given by judges are equally wide. Lord Chelmsford, in "Galloway v. Corporation of London," says: "The word street does not mean the roadway, but a thoroughfare with houses on each side"—a reasonably restricted definition, and one generally accepted; yet it was held by Justices Page Wood and Selwyn that, although the word "street" may include the houses fronting on a public thoroughfare, as well as the actual roadway or footways, yet the street, in the *primâ facie* meaning of the word, is confined to the roadway and footways. These are conflicting dicta of the Courts. But a "street" has a beginning. At first it may consist only of a roadway, rough and unfinished, with one or two houses, and then, according to Lord Chelmsford's definition, it cannot be called a street. How many houses are necessary to be built to entitle it to the name of street? For the purposes of the Act a prospective meaning should be understood; but the line of houses ought at least to be determined by the authority, and if only one house is erected that is set back, they ought to be able to require that new erections conform to the same line. On what other ground can we expect uniformity or compliance with the Act? If the dictum is to be accepted that a new road with one or two houses in it is not yet a street, and that if houses "on either side" is meant to mean those immediately adjacent, we are obliged to arrive at the conclusion that all unfinished roads are not streets, and that a builder can erect his houses as near as he likes to the roadway. But this difficulty could not occur if properly defined lines were laid down on the plans of new roadways sanctioned by the authority. The unfortunate rule whereby the "written consent" of an authority is required, leaves the door open to many manœuvring builders, and as we have pointed out in other cases, it may be sometimes so relaxed as to afford no protection to the public, and may reduce an Act to mere useless form in the case of those who will take the trouble to evade it, and have the boldness or effrontery to defy the authorities.



ARCHITECTURAL BRICKWORK.—XXXVI.

ORNAMENTAL ARCHES.—BRICK AND TERRA-COTTA.

VERY effective combinations of brick and terracotta are to be found in many of the Italian and North German churches. The architect has now a good choice in the selection of these materials, and the arches produced by them are capable of far more variety than can be obtained on stone or brick alone. The arch itself may be formed of moulded bricks, with terracotta for the label and edge mouldings. The Romanesque buildings afford instances of the admixture, the principle to be observed being to use the terracotta for the ornamental portions and mouldings, and the brick for the construction. By this means the lines and arrises of the mouldings and ornamental relief have all the sharpness and precision due to harder material, and the longer pieces can be made to the curvature of the arch. Of recent examples the large, deeply-recessed doorway of the Natural History Museum, Kensington, may

be instanced as an excellent specimen of moulded and enriched membering, though in this case no bricks are employed visibly. In France moulded terracotta for arches and vaults has been extensively used, and one of the best applications of the material to the latter purpose is the vaulted ceiling of the church of Neuilly, near Paris, designed by M. Simonet. Lately, brick and terracotta have been very successfully used by Messrs. George and Peto in several recent buildings, and we may mention the terracotta arches in long and short courses in the Prudential Insurance office, Holborn, and the Hotel Métropôle, Brighton, by Mr. A. Waterhouse, R.A.

SOFFITED ARCHES.

Where thickness of wall permits, a highly decorative effect is produced by enriching the soffit or intradosal surface of the arch. The arches of windows on the ground-floor and first-floor of public buildings are sometimes treated in this manner, and a bold and dignified effect is obtained. Sketches 1 and 2 represent the ground-story window-arches to the Economic Assurance Company's offices, to which we referred in our last article, p. 824, in which there is a deep soffit enriched with square panels and pateræ of red terracotta, and an inner band of the same material, having a row of pateræ. . The edge-moulding below the brick voussoirs is also of red terracotta, jointed as shown; round the arch is a label of the same material. The voussoirs or arch bricks have small diamond-shaped squares of blue terracotta let in flush between every other joint, which forms an agreeable ornamentation. These arches are very effective, and are carried by shafts of marble with terracotta capitals. On the first floor there are three deeply-recessed circular-headed windows, having terracotta glazed shafts on the jambs, the outer arch members richly modelled with amorini, and clusters of fruit gracefully introduced between the label and the projecting edge moulding. A panelled soffit divides the outer arch from the inner members, which are cusped and enriched. The style of arch is the Romanesque of Northern Italy.

CONSTRUCTION.

It will be noticed that by this combination of red brick and terracotta very rich effects can be produced. The mode of jointing is indicated in our section of arch, Fig. 2. It will be observed that the edge moulding and soffit are both in terracotta, and may be cast in circular blocks to the under curve of the brick arch. In large arches with deep soffits the edge member may be formed of separate blocks, the soffit being also modelled separately. The joints of the latter may be joggled or rebated together, and should be fixed when the arch is being constructed. Great skill and care are required to properly back the brick arch to the terracotta. The blocks ought to be modelled and fired with great accuracy from full-size details, as true lines and fine joints are essential.

EXAMPLES.

One of the most important modern buildings in which terracotta has been employed in the construction of arches is that of the Science Schools for the Science and Art Department, South Kensington, designed by Major-Gen. Scott, R.E., details of which we published in the early part of 1876. The arcade on the ground floor, having arches 12ft. span facing the Exhibition-road, has deep coffered soffits of majolica fixed to an iron plate (by bolts) at the back of the brick arches. The window arches have outer rings of brick with deep moulded architraves of terracotta round the openings, eight blocks to each window, or with a centre key-stone block, the inner radius of arch being 3ft. 1½in. The outer arches of arcade are of terracotta, with moulded and enriched soffits. The majolica soffit enriched by coffers, which form the ceiling of the arcade, is thus constructed. The rough arches are of brick. At the back of these arches or vaults a plating of iron is placed, carrying the majolica slabs of soffit by means of bolts, which pass through the brick arch, and are secured by nuts above the plating. In a similar manner a number of soffit panels of terracotta can be secured — copper or galvanised iron bolts would be necessary. We recommend, however, a method of jointing and interlocking the joints as being preferable to the use of metal, and when an architect has made up his mind to have enriched terracotta soffits, we advise him to draw full-size details, and to consult with a skilful manufacturer of terracotta as to the mode of forming the blocks and jointing them. Fig. 3 represents a very effective arch of brick and terracotta at Bologna, in the House of the Caracci, forming an arched corbelling.

THE SYMBOLISM AND ICONOGRAPHY OF EARLY AND MEDIÆVAL CHRISTIAN ART.—XIII.

By GEORGE ASHDOWN AUDSLEY, F.R.I.B.A.
(Author of "Handbook of Christian Symbolism," and several works on Architecture and Art.)

IN Late Mediæval art greater freedom of treatment is found in connection with the Aureole. It is frequently formed entirely of flamboyant or straight-pointed members or rays, issuing from a centre or nucleus, and having no defining or bordering lines. In a miniature of the 16th century, in a manuscript preserved in the Bibliothèque de Sainte-Geneviève, the Virgin with the divine Child is depicted issuing from a large lily-like flower. She appears in the bright field of an oval Aureole, the edge of which is formed of numerous flamboyant and straight rays. This conveys an idea of vivid splendour. A still more beautiful and interesting example, conveying the same idea, is to be seen in the suspended figure of the Virgin and Child in the church of Kempen (Westphalia); in this instance the Aureole is, along with the entire work, executed in metal, painted and gilded. The attribute is formed of twenty-eight long rays, alternately straight and flamboyant, their points indicating the usual lenticular form. Above the Virgin, on the suspension rod, is a figure of God the Father, invested with a triangular Nimbus, and surrounded by an Aureole formed of eighteen flamboyant rays. As neither the Virgin nor the Child has the Nimbus, God alone, according to the strict rules of Christian Iconography, appears in Glory. This interesting work is engraved in Gailhabaud's "L'Architecture du Vme. au XVIIme. Siècle." Numerous examples of similar treatments are to be found in Late Mediæval art. Didron gives an illustration of the figures of the Virgin and Child, taken from 16th-century glass in the small church of Jouy, Reims. In this curious work the "Incarnate Word," depicted as a small, naked infant, is represented as if in the womb of the Virgin (conventionally, of course), invested with the tri-radiated Nimbus, and surrounded by a long, oval Aureole of flamboyant and straight rays. Speaking of another example of this peculiar treatment of the Virgin and Child, Didron remarks:—"A subject precisely like that of Jouy may be seen in a Limoges enamel now in the possession of M. l'Abbé Texier, curé of Auriat (Creuse), and corresponding member of the Committee of Arts and Monuments. The Virgin is clothed in a white robe, partly thrown back, leaving exposed an under-garment of red and gold. Upon the womb of the Virgin a little naked human being, with clasped hands, is represented within a golden Aureole. God the Father, floating on the clouds of heaven, blesses the Mother of His Son. The figure of the Virgin Mary stands out prominently from the blue background of the enamel. She is surrounded by the moon, a star, a tower, a lily, &c., all attributes commonly employed during the 15th century to distinguish her."



In the accompanying illustration, Fig. 40, we give an interesting example of an Aureole formed entirely of straight pointed rays, arranged in radiating fashion both from the body and the head. This treatment, which makes the rays cross in the neighbourhood of the Nimbus, is very uncommon, if not unique. Another novelty is to be noted in this example—namely, the manner in which the wings of the angels inclose the Glory. This illustration is taken from the stalls of the Municipal Chapel, at Siena.

Before we pass on to another section of the present subject, we must direct attention to a Greek form of the Aureole, which is evidently an extension of the triangle. This Aureole assumes the form of a star of six or twelve points, produced by either two or four superposed equilateral triangles. If the student will refer back to Fig. 23, in

Article VII., he will find an illustration of an Aureole of this star-form with twelve points. This example is taken from a Greek painting of the 15th century, and represents Christ as the "Angel of the divine Will," according to the language of the Greek Church. There is no doubt that by adopting this form of Aureole, the artist has sought to express, in the most forcible manner, that the Angel is invested with all the power and authority of the Blessed Trinity. Aureoles of this description are, however, comparatively rare in Greek art, and we are not aware of a single example obtaining in Latin art.

Up to this point we have confined our remarks chiefly to the forms and outlines of the several Aureoles introduced by Christian artists, and although we have by no means exhausted the subject, enough has probably been said to give the student of Christian Iconography a clear and fairly comprehensive view of the subject. We have now to briefly describe their surface treatments and colouring.

With the desire to clearly show the nature of the Aureole, and to express soft effulgence or vivid scintillation, artists have either covered its field with radiating lines, as in Fig. 37, or with flames or flamboyant rays, as in Fig. 30, in both cases emanating from the figure and diverging towards the edge of the Aureole. In the miniatures of illuminated manuscripts, the rays on the field of the attribute are usually of gold, highly burnished, and producing a most brilliant effect. In mural paintings and stained glass, they are either of yellow or red, the representatives of light and fire.

The colour of the field, upon which the golden or flame-coloured rays are placed, varies in different examples: the most appropriate, however, is blue, representing space, or the clear sky at noon as it appears in Southern Italy. This is the field across which the symbolical rainbow throws its arc, with its full significance, abiding ever in the full splendour of the glory of heaven.

In addition to the divergent rays, other objects are sometimes introduced in the field. In the picture of the "Last Judgment," by Fra Angelico, preserved in the Academia delle Belle Arti, at Florence, our Lord is represented invested with a rayed lenticular Aureole, upon the broad margin of which are depicted eight Seraphim. On the reverse of a medallion in bronze, struck in commemoration of a Council held by Pope Paul V. (Pietro Barbo, the Venetian, 1464—1471), is a representation of the Last Judgment, in which the Aureole of the Deity is bordered with numerous Cherubim, with their heads and wings closely and uniformly adjusted together. In the beautiful picture of the Last Judgment, by Fra Angelico, in the possession of the Earl of Dudley, the field of the Aureole is divided into three concentric divisions, the inner one, next to the figure of Christ, being, as it were, the nucleus or space of concentrated light. Around this is the second division, covered with divergent rays, and containing several Seraphim, issuing from the edge of the inner portion. The outer division acts as a border to the whole, and is entirely covered with a succession of Cherubim. Clouds, amidst which angels are flying, are placed under the feet of Christ, forming both His throne and footstool. The field of this Aureole is full indeed, and forcibly brings to the mind of the observer the overwhelming majesty of the final Judge, when He shall come, surrounded by the countless hosts of heaven, to deal justice to risen man. M. Didron, speaking of Aureoles similarly treated, says:—"A painting on wood, preserved in the church of the Abbey of Saint-Riquier, representing the Assumption, shows in the upper part of the picture, or, as it were, in heaven, the Holy Trinity preparing to receive the Virgin Mary, who is lifted up by angels and borne towards heaven. The Holy Trinity appears in the field of an Aureole, which is nearly circular in form, and has round its margin a glittering cordon of angels. The superb *Cité de Dieu*, translated by Raoul de Presles, preserved in the Bibliothèque de Sainte-Geneviève, presents several examples of similar Aureoles surrounding the Deity; these are covered in their fields with Seraphim and Cherubim of gold, flame colour, and azure."

We cannot, of course, look upon the angel forms thus introduced on the field or border of the Aureole as integral parts thereof; they are evidently intended by the artist to indicate the close relation to God of those choirs of angels whose office it is to sing His glory and love, and to proclaim His wisdom before His throne for ever. This close relation is forcibly expressed by placing the angels so near the Deity as to be inclosed in the intense radiance which immediately surrounds Him—a glory which artists have sought to intensify in their representations by rendering the angels as beings formed of light and living flame. The same idea of close relationship to God has also been expressed in art by investing certain angels with the Aureole, which is, strictly considered, the special attribute of the Deity. In the magnificent thirteenth-century glass of the south transept of Chartres Cathedral, we find the Thrones (the third choir of the angelic host) inclosed in crimson-coloured Aureoles of an elliptical form. The Thrones appear there as two great angels with green wings, and bearing sceptres. These beings express perfect rest—the everlasting stability of the throne, sceptre, and power of the Almighty.

There are other objects introduced in the field of the Aureole which appear somewhat out of place, and in connection with which the artist's intentions are rather obscure. This is the case with the candlesticks represented in the Aureole in the crypt of the cathedral of Auxerre, Fig. 38. In this work it was probably the artist's intention to represent the "seven lamps of fire burning before the throne, which are the seven Spirits of God," but on what grounds *two* candlesticks, holding fourteen lights, are introduced it is difficult to conjecture. It is obvious that there exists a considerable difference in form and general treatment between such an Aureole as that in the Auxerre crypt and those represented in Figs. 29, 30, 31, 32, and 35; and our own studies in Christian Iconography incline us to accept two leading varieties of the aureole in art, entirely different in their prime significations. Aureoles such as that at Auxerre, and those represented in Figs. 36 and 37, appear to us to express the region of heaven immediately surrounding the throne of God, rather than to be personal attributes, such as the generality of Aureoles are most certainly intended to be. In depicting Christ seated in such an Aureole as that on the Imperial Dalmatic, Fig. 36, it is quite evident that the artist had the vision of heaven in his mind; and doubtless his desire to render the full description in the Revelation was only bounded by his own powers of representation, and the difficulties of the materials in which he worked.

With the view of conveying the idea of heaven by material objects, artists have also powdered the field of the Aureole with stars and have introduced the sun and moon. On this subject, Didron remarks:—"The field of the Aureole is sometimes lighted by two stars, shining near the head of the divine personage whom it invests; one star is on the right and the other is on the left. When the Aureole is narrow, and the sitting figure has the right hand raised in the act of blessing, both stars are placed on the left, the opposite space being occupied by the hand. The entire field is occasionally, though rarely, gemmed with stars, like the sky on a clear night. The points of the stars vary in numbers from four to eight. The left-hand star is sometimes depicted with fewer points than that on the right. When such obtains, the right star is intended for the sun and the left for the moon, notwithstanding that both are similar in all other respects." In Fig. 36, the outer zone of the Aureole is richly powdered with four-pointed stars, and towards the upper part, on the right and left of the emblems of the Passion, are introduced the sun and moon, both in the shape of a crescent, with a face within its horns.

In the examples given in Figs. 29, 30, 32, and 39, and in all examples having similar treatments, the idea of personal radiance is all that the Mediæval artists intended to convey—a supernatural effulgence issuing from or surrounding the personage represented, and more or less dispersed towards the confines or localised within boundary lines, thus forming the clearly-defined attribute called the Aureole.

When seated figures of the Deity are invested with the Aureole, it is usual to find a throne or seat or a rainbow introduced in its field; and it is also usual to see something in the nature of, or fulfilling the office of, a footstool likewise introduced. In the interesting Aureole shown in Fig. 21, given in Article VII., we find Cherubim forming both the seat and footstool of our Lord. In Fig. 36 the seat is a rainbow, whilst the footstool is formed of two interlaced fiery rings, furnished with wings and studded with eyes—the wheels spoken of by the prophet Ezekiel, "full of eyes round about." Artists have used these winged and fiery wheels to represent Thrones, or the third choir of angels. In Fig. 37, both the seat and footstool are in the form of narrow-arched members or bows.

The field of the Aureole is very frequently devoid of any ornamentation or insertion, being perfectly plain gold or colour margined with simple lines, a narrow border, or a band bearing an inscription. The Aureole of the Agnus Dei, in the miniature of the Triumph of the Lamb, in the evangeliarium of Charles the Bald, is surrounded with an inscribed border; but the usual chalice is introduced in the plain field, and the Lamb stands upon an open scroll. In another fine page of the same manuscript, representing Christ in Glory, surrounded by the portraitures and symbols of the four Evangelists and the portraitures of the four great Prophets, the Aureole of our Lord is surrounded with a border bearing the inscription: XPS . VITA . HOMINUM . CAELORUM . GLORIA . SUMMA . LIBRAT . TETRAGONUM . MIRO . DISCRIMINE . MUNDUM. In this case the field within the border has several concentric lines or bands of colour, and our Lord is seated and rests His feet upon a circular disc with a fringed edge. This may be intended to represent a circular cushion or carpet, placed before the throne, which is not shown or indicated in any way in the miniature, being hidden by the drapery of the figure.

In respect to colour treatment, as might be expected, the Aureole differs but little from the lesser attribute, the Nimbus, as applied to portraitures of the Deity. Similar ideas are sought to be expressed and conveyed by artists in both the attributes, and, accordingly, the same range of colours is employed. The colours which have been considered the most appropriate, however, are those which most forcibly represent fire, light, and space—namely, red, yellow, white, and azure. A summer day, with its clear expanse of blue sky and vivid sunbeams, has furnished artists with the most appropriate suggestion for the colouring of an Aureole indicative of celestial brightness; but artists have often sought to go beyond natural phenomena as sources of inspiration, and in their own fertile imaginations have essayed to express supernatural radiance and glory.

Didron, in speaking on this subject generally, remarks:—"Both the Nimbus and the Aureole being a luminous efflorescence of the head and of the body, its colouring in sculptured and painted monuments should be that of light itself. Accordingly, we should expect to find this to be the case in mosaics, frescoes, painted glass, miniatures of manuscripts, and storied tapestries. But light is ever varying in its colours; like water, it becomes tinged with divers colours, according to those of the different objects which reflect it, or its own proper intensity. The stars, sources of the most vivid light, emit scintillations of blue, violet, red, and white. . . . Light, decomposed by the prism, divides itself into seven principal elements, which, in combination, form an infinite number of tints or *nuances*. The glory, possessing the properties of light, will consequently vary like it in colour from a deep blue to the most vivid white. Accordingly the Aureole and the Nimbus are sometimes coloured blue, violet, red, yellow, or white. But at all times, yellow, the colour of gold, has been esteemed the most precious, the most noble, and the most brilliant of all colours: gold, of which it is the type, being considered as light solidified. On this account the Nimbi and Aureoles, especially those of the Deity, are most frequently of gold or a yellow colour. Hence representations of the sun, whether ancient or modern, are usually of a yellow colour, red only being adopted with some particular intention. Homer speaks of Apollo as having hair of gold; and Phœbus, the blonde and the golden, is quite as great a favourite as the blonde or golden Ceres."

Notwithstanding the above facts, we think there can be little doubt that, as in the case of the Nimbus, the colouring of the Aureole is occasionally symbolical. When we bear in mind that the colour red signifies divine love, power, and royal dignity; that blue is emblematical of heaven, and signifies godliness, and divine contemplation; that pure yellow or gold signifies intense brightness and the goodness of God; and that white or silver signifies light unsullied, purity, joy, and life, it is not difficult to realise that all such colours may be, and probably very often were, used in connection with the divine attribute under consideration, with a direct and highly appropriate symbolical signification.

The few remarks above given with reference to the general artistic treatment and the colouring of the Aureole will be sufficient guides for the practical student of Christian Iconography and for the modern ecclesiastical artist. In our next article we shall conclude this branch of our general subject with remarks on the application of the Aureole.

(*To be continued.*)

"BUILDING NEWS" DESIGNING CLUB.

A PARISH HALL AND SOUP KITCHEN.

WE publish to-day the two chosen designs for this subject—the last of the series for 1889—90. The conditions issued for competitors to work to were as follows. Subject H.—A parish hall and soup kitchen, to be erected on a corner site with a side frontage of 125ft. deep, and a frontage of 35ft. to the main road of a small village. The best-sized room obtainable on the site to be provided, allowing for a good roomy stage with a retiring-room, suitable for class and committee purposes, or as a green-room for theatrical performances. These parts of the hall to have a rear entrance, and the soup kitchen may be in a half-basement. Provide good main entrance, lobby, and stairs to gallery at end of the hall only. The floor of the stage is to be 3ft. above the level of the hall, and to have an arched opening dividing off the wings from the assembly room. Hall to be heated by hot-water coils in recesses in walls. Style, Late Tudor Renaissance, in stone, and roofs covered with green slates. Provide for ventilation. Scale, $\frac{1}{8}$in. to foot. Sufficient drawings to show design, including sketch view.

The selected design is by "Wallaby," "Red Rover" comes second, and the third place we give to "Fiddler"—three competitors who before have run neck-a-neck in the race for priority. Again we have to admit that neither of the competitors realises quite what we intended, or rather, each fails to grasp the requirements of the conditions. Either their entrances are inadequate and poor, or the retiring-room accommodations and stage are inadequate for theatrical performances. Thus "Wallaby," though giving a good green-room, makes his w.c. and lavatory arrangements excessively small, with no proper place for ladies' use. The doors on the stage are properly placed, and room for flies is provided. The soup-kitchen would be dark, and the entrance for the public to the waiting-room is awkward to a degree, at the foot of the stairs. There should really be one way in and another way out in so small a place. The design externally is suitable and pretty, but the low ceiling to the big hall is a great mistake, wasting valuable air-space, to say nothing about good proportions. The gallery would be very hot. Honeyman ventilators may be all very well, but cubical contents are of primary importance. Mr. Butterfield's rule in designing a church is that the air-space should be equal to the requirements of the intended congregation for the period of a full service without aid from changing the air during that time. There can be no object in shutting off the available space afforded by a high roof as "Wallaby" has done. The accommodation for housing scenery at the rear of the stage above the retiring rooms is a necessary provision. "Wallaby" has improved, and we commend his industry and care. "Red Rover" deserves the same praise, and while we have never hesitated to condemn the faults of his designs, the justice of which criticism he will admit, we have always acknowledged with equal care his good points. This has been our endeavour with all the designs so far as space at our disposal would permit, but the large number of competitors has often precluded us from naming more than a few in precise detail. "Red Rover's" stage is bad. The stairs up to it cut into the space, and prevent side scenes being used, leaving no room for players to "go off" properly. Then the door in the middle at the back of the stage is exactly where it should not be. See how the depth of the platform is spoiled, and the actors always having to retire from the centre of the scene. Separate conveniences are contrived for the two sexes, and the separate doors for soup-kitchen and stage are an advantage, though not necessary for such a building. The soup-kitchen in this plan is much better than in the first design. The entrance to the hall is not so roomy, but the ticket-place or office would serve also as a cloak-room. The external door to it is not required, and the space it takes would have been better devoted to a more ample main doorway, making it less in the corner. The external design has good points about it, though the front façade is patchy and lacking in "go." "Red Rover" draws more carefully than he did. "Fiddler" does not improve to the extent we had hoped for. His Parish Hall design is not up to his earlier efforts, and his drawings are careless, that is to say, his perspectives are. He is more correct in style to the period of Late Tudor Renaissance than the first two designers, and he seems to know old work with advantage, even to the weakness of imitating the false conceits at times to be noted in historic buildings. The covered balcony, surmounted by a pediment over the portico, is useless with no doorway into it, and the blank window on the left-hand to balance the window of the cloak-room on the right is a poor expedient in good work. Filled-in arches never intended to be open ones in two bays of the flanks are a mistake, and seem to aim at the idea of an old market shelter, bricked up. The side door would be a nuisance during performances, when those outside could create a disturbance, while on the occasions of political and excited gatherings the results of such a doorway might easily be serious. The steps at the other door, too, are objectionable. The stage is shown level with the floor of the hall—that is to say, no steps up to it are shown on the plan. The greenroom is half as big again as the stage. The public space to the soup-kitchen is too small, and the soup-kitchen is too big. The hipped end of the hall roof ill accords with the somewhat over-elaborated gable at the other end, standing, as it does, like a masking screen to the façade. "Fiddler" should learn the elements of sciography, for his shadows as here put in bear no reference to the projections from which they are cast. "S. A. H." (Stockport) crowds his entrance into the corner under an angle open porch, and he cramps his staircase into the other corner facing the front doorway. To reach his soup-kitchen, he presumes that the ground along the flank façade falls rapidly. This also allows him to contrive prettily an external staircase up to the stage and retiring-room. The stage is a good one, roomy and ample. The architecture has the merit of being simple; but it is poor in idea, and the pepper-boxes, which do duty as ventilators, serve to over-emphasize the semicircular arch form introduced everywhere in the composition. "Y" in a circle sends us a design which is greatly over-wrought and fussed up with nondescript detail, so much in fashion with Non-conformist chapel builders some twenty years ago. We condemn the style without reserve, but we recognise cleverness and thought in "Y.'s" plan. The w.c. between the gallery stairs and the entrance vestibule is too publicly placed, and might become a nuisance. The ticket-office and cloak-room would be useful, and the soup-kitchen arrangements are very good indeed. The drawings show ability, and their author should really study works of a better style. "Pisistratus" sends a commonplace design with a half-timbered tower surmounting the staircase to the gallery. The stage is too shallow, being only 12ft. deep. "Clansman" is more Scotch in style than anything, making a design which looks like a police-station somehow, though it lacks character; notwithstanding this, his plans are carefully drawn. "Coombe" believes in flint snap work and bastard Late Gothic having wide Tudor arches and no tracery or mullions. This is not Renaissance work; and as for his interior of the hall, who shall describe it? The style has but little reference to the exterior. The plan is a practical one, though it is presumed that a long jump will be taken by those wishing to reach the stage from the hall, no stairs or room for steps being indicated. "Renaissance" favours us with a tower to mark the angle of his design, but it is as uncalled for as it is ugly, riding over the gallery doorway and window to the main entrance lobby. The great projecting oriel bay window, too, at the other end out of the committee-room (which is only 31ft. by 22ft.) is another piece of extravagance quite out of keeping with such a building, towering its assertive bulk into the street above the modest soup-kitchen in the basement. When used as a greenroom, the author says this apartment can be divided by a screen into two; but the second half in that case would be totally dark, as there are no other windows beyond the aforesaid big bay. "Syak" sends an incomplete drawing with a front more like a schoolhouse, and a fairly good place; but the design is wanting in interest. "Dot" makes his building like a great Classic "meeting-house," or it might be a corn-market. The soup-kitchen is as big as the hall over it. His drawings are neatly done, but the perspective is unfinished and unfortunate in effect. The other designs are by "Menelaus," "S. C. D.," "Sector," and "Box." The awards of the prizes in connection with our Designing Club will be published in the autumn.

MASONRY AND STONE-CUTTING.*

By LAWRENCE HARVEY.

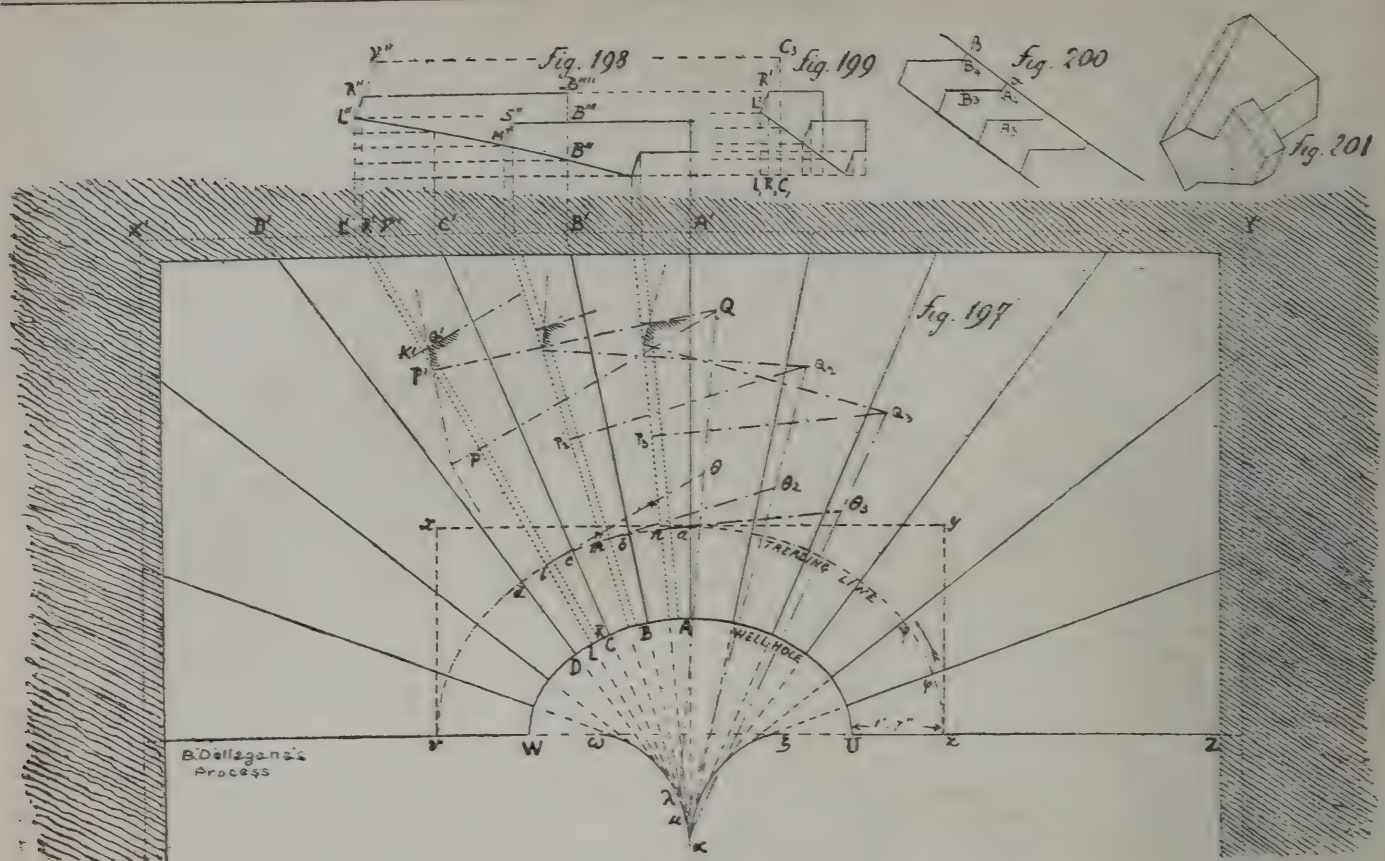
[THIRTIETH LESSON.]

GEOMETRICAL STAIRS.

A MAN'S step is about 25in. on the level and 12½in. going up a ladder. By combining these two facts, we get the formula T + 2R = 25in., in which T = tread, R = riser, as the basis for finding the proper proportions of tread to riser. If T = 12, then R = 6½; if T = 9, then R = 8, &c. But R can only vary between the limits of 4½in. and 8in.

Stairs may be formed of straight flights, the steps supported by a wall at both ends, or the steps supported by a vault; or the steps may be housed in the wall at one end and left free at the other end, leaving in the centre of the staircase an open well-hole. In that case the steps are

* All rights reserved.



made to rest upon one another by joggled joints, such as M″ S″ B‴ (Fig. 198). The joint on the lower step is called a back-rebate, and in the upper step a bird's-mouth. If the well-hole be curvilinear, as in Fig. 197, the stairs are called geometrical.

In geometrical stairs the widths of the steps vary from one end to the other; but the proportions of treads to risers are fixed on a line parallel to the well-hole at a distance of 1ft. 7in. from it. This is called the *treading-line*, on which all the treads must be equal.

To draw the plan (Fig. 197), take z U = length of the shortest step; deduct therefrom U z = 1ft. 7in., and draw the rectangle $z\,y\,x\,v$, of which the sides are equidistant from the walls; inscribe in this rectangle a semi-ellipse, and this will be the treading-line of the stairs. If the outside walls formed an irregular polygon, the treading-line might be drawn with centres so as to form a continuous curve. Divide the treading-line in n equal parts = to the widths of the treads, $z\varphi = \varphi\psi = \ldots = ab = bc = cd = \ldots$, which gives n + 1 risers from z to v. If the number of steps be not sufficient, the proportions of the treads and risers may be made stiffer, or the steps themselves may be made shorter so as to extend the treading-line.

Then draw normals to the curve $v\,a\,z$ through the points of division found, and through their mid-points l, m, n, . . . The intersections of these normals will form a polygon, the enveloping curve ($\omega\lambda\mu\alpha\zeta$) of which is the involute of the treading-line. On every one of these normals carry 1ft. 7in., and you can get the curve U A B C D W as well-hole. The normals A A′, B B′, C C′ . . . are the projections of the arrises of the steps.

Now, if on the vertical cylinder $z\,a\,b\,c\,d$ . . . we draw a helix—that is, a curve on which the co-ordinates of every point counted on the base line have the constant proportion of tread and riser, z will be at a level = R and every other point of division at the same height, R, above the former. If a horizontal line moves along that helix, remaining at the same time tangent to a vertical cylinder on the involute $\omega\lambda\alpha\zeta$, then it will describe a surface which will touch the arrises of all the steps; this is the extrados of the stairs, and it is a skew-surface.

The soffit of the stairs is a surface identical with the former, but lowered uniformly of a certain distance δ, which we shall determine later on. The joint lines of the soffit are projected on the normals to the treading line drawn through the mid-points l, m, n, . . . ; one of the steps, for instance, will stretch between the lines B B′ and L L′. So that the surface of the joint be everywhere normal to the soffit, the correct way is to erect normals in two points of the joint, then divide these normals in equal parts, and work the surface by means of a straight-edge placed on these points of division. The surface is then a hyperbolic-paraboloid. Notwithstanding this terrible name, it is a very easy operation to accomplish when the well-hole and the walls are circular, and Mr. Wornell, the foreman of masons at Messrs. Nightingale's, Lambeth, always produces the joints of his stairs on that principle. In our present case, it would involve making two separate bevels for each step; besides which the construction of the normals is more difficult than in circular stairs. We therefore let the joint be a plane taken through the arris L L′ of the joint and the normal to the surface in P, mid-point of L L′.

To construct that normal, we must find the plane tangent in P, which is done by substituting a connecting paraboloid to the surface of the soffit. To draw the connecting paraboloid, produce $l\theta$ tangent to the helix, and let it meet a horizontal plane at the level of 3 steps below, in which case $l\theta$ = 3 treads. As the joint line l L touches a vertical in λ, if a horizontal line be made to move in contact with $l\theta$ and the vertical λ, it will produce the connecting paraboloid required.

Now, to find the plane tangent to the soffit in P, draw $\lambda\,\theta$ generator of the connecting paraboloid, and cut $\lambda\theta$ and λl by a vertical plane, P Q. The line which joins in space the points P and Q is another generator of the paraboloid; the plane tangent to the soffit in P contains that line P Q, and the joint line L L′. Turn down the plane P Q round its trace; P′ is at the level of 3 risers above P, draw P′ Q and produce P′ G′ at right angles with it; that is the normal required through which the plane of the joint must be taken. At about 2in. above the point P draw K′ G′, the upper level of the step. Now we can settle the height B‴ B‴′ (Fig. 198), which we called δ. The arc $l\,m\,b$ = $\frac{3}{2}$ of width of tread, therefore the point l is $\frac{3}{2}$ riser above the point b. Adding this difference of level to the height P′ K′, we have δ = P′ K′ + $\frac{3}{2}$ riser. Therefore it follows that the height P′ K′ is constant for all the steps. The construction of the normal at the mid-point has to be made for every step independently, for its angle varies with each step.

Face Moulds.—The face, which is housed in the wall, is the intersection of the vertical plane X′ Y′, with the surfaces of the steps as shown in Fig. 198. The soffit is a curve, of which several points are found by the intersection of generators of the soffit. If a nosing is put to the steps, it must be added on the mould. The face which forms the well-hole (Fig. 199) is a cylindrical surface, and must be developed. Mind the joint line is curved. To find a third point of that curve draw a horizontal generator of the plane of the joint, say $c\,\gamma'$ on plan, find its level γ, by which get C_3 above C_1 (Fig. 199); then draw the curve.

Cutting of the Steps.—Select a stone which will contain the step; work the tread, draw thereon the outline B B′ R′ R, then with a square work the riser, the wall-face, and the well-hole. Draw the face moulds in their respective positions, and work the joints, both rebate at the back and bird's-mouth in front. Through guiding marks work the soffit of the stone with a straight edge.

Sometimes (Figs. 200, 201) a piece $\beta\,B_4\,B_3\,A_3\,\alpha$, is left on along the well-hole to form a string about 4in. or 5in. wide upon which to fix the balustrade. In Fig. 201 is rather an exaggerated view of a step finished in this way. When the off-set $\beta\,B_4$ is less than 2in., it need not entail any sensible waste of stone; but sometimes the string is built separately, and the steps are housed in it, as we shall see in our next lesson.

BOOKS RECEIVED.

Public Libraries, by THOMAS GREENWOOD, F.R.G.S., third edition (London: Simpkin, Marshall, Hamilton, Kent and Co.), is an entirely rewritten account of the Public Library movement. In the introduction the author enumerates the great libraries of the Continent and the United States, and sketches the progress made under the Public Libraries Acts. Mr. Greenwood's book not only describes the progress made, but the buildings that have been erected, illustrating many of them by plans and exterior views. The subject of local taxation as it bears on the question is discussed, and the unequal rating, the bulk of which falls upon the occupier. We agree with the author that a Minister of Public Instruction is of the first importance if we are to keep pace with other Governments. The passing of the Ewart Bill of 1850 forms the subject of a chapter, a good portrait being given of that gentleman. Manchester was one of the first places to take advantage of the Act. A very instructive chapter follows, describing the mode of adopting



the Acts, and the steps to be taken by boroughs, districts, and parishes, including the legal forms necessary in carrying out the provisions. Descriptions follow of public libraries in the northern counties, and the libraries at Barnsley, Barrow-in-Furness, Blackburn, Bolton, Bootle, Darlington, Dewsbury, Leeds, Liverpool, Manchester, Middlesbrough, Newcastle, Preston, Sheffield, Wigan, and other towns are minutely described and illustrated. The Midlands include descriptions of buildings at Bedford, Birmingham, Derby, Leicester, and several other towns. The public libraries in the Eastern Counties include those built at Great Yarmouth, Ipswich, Norwich, Brighton, Reading, Southampton, and other places. Mr. J. Passmore Edwards gave a thousand volumes to the last named town. Bristol, Cheltenham, Exeter, Newport, Plymouth, Salisbury, and Truro are described in connection with the movement. The libraries in Scotland, Ireland, and Wales, including the recently-opened Edinburgh library, follow. Not the least valuable part of the work is the account of the development of the Acts in London. Descriptions and illustrations are given of the libraries at Westminster, Lambeth, Battersea, Chelsea, Kensington, Clapham, Clerkenwell, and the extension of the movement at Deptford, Hampstead, Islington, and Newington. The villages and rural districts, the legal aspects, the formation of libraries, details of fittings and administration, and a sketch of the movement in America and Canada, in addition to various miscellaneous matters connected with the working of libraries, form other chapters. The book is useful to all promoters, architects, and others.—*The Turkish Bath; its Design and Construction*, by R. Owen Allsop, Architect (London: E. and F. N. Spon), is a reprint in a new form of the articles that have appeared in the Building News. The author's work, as it now stands, is a very useful guide to the design and construction of this description of bath, and will be a welcome addition to the shelves of the architect's library. The requirements, principles of plan, and construction of public baths are clearly laid down in a concise manner; the author's experience has enabled him to point out the essentials necessary to be kept in view. Mr. Allsop's treatise is one on a special branch of architectural design very little understood by the profession, and it is therefore likely to command attention. The provision of Turkish baths is sadly out of proportion to their need in all large towns, and one day, probably, sanitary authorities will become alive to the fact. Those already erected pay well, and there is obviously an increasing demand for well-arranged baths of this kind. Both public and private baths are discussed, and the work is well illustrated by places and diagrams. It is unnecessary to enter into the subject of the work, already known to many of our readers who have perused the articles. Rightly, the requirements of a public bath are followed by a description of the plans of some of the best London structures of this class, including the Turkish baths, Savoy Hill, those erected by Mr. Robert Walker in the Northumberland-avenue, the Euston-road baths. The details occupy a large portion of the work, careful attention being bestowed on the design of the hot and cooling rooms, washing and shampooing rooms, douche-room, plunge-bath, dressing and other apartments, the important auxiliaries of heating and ventilation. The engineering appliances and other details receive also their proper share of attention, and the designs given for small private baths in connection with ordinary house arrangements are valuable. The architect will find all the information he requires in the pages of Mr. Allsop's work.

BUNGALOW, DOUGLAS, ISLE OF MAN.

THIS Bungalow is to be erected in the Isle of Man, near the sea. The walling is built of large cobble stones from the beach, and the upper part is plastered. The curb roof has been adopted, as, besides permitting a picturesque treatment of the exterior, it affords the maximum amount of space for bedroom in the roof. The roof is covered with red tiles, and the woodwork is painted white. There are four bedrooms and a bath-room on the first floor.

M. H. B. Scott, Architect.

Douglas, Isle of Man.

THE SOCIETY OF ARCHITECTS' AUTUMN EXCURSION, 1890.

THE Council of the Society of Architects have decided that the Society's Excursion for the members and their friends should take place this year during the last week in August, in the county of Kent, which is so rich in beautiful objects of interest to the architect.

A programme is in course of arrangement with the secretary of the Kent Archæological Society, and special facilities are expected to be afforded for visiting places which are not usually available for inspection.

Rochester will probably be the rallying point on the 25th August, with Maidstone, Tunbridge, and Canterbury as centres, taking in during the week the many buildings in and around and situated along the route from point to point, finishing up with a drive from Faversham, *viâ* Sittingbourne, back to Rochester.

As soon as the places to be visited are fixed upon, and the programme completed, with full information as to the stopping and sleeping places, it will be issued to those who may desire to join.

We are informed by the Council that the office of secretary to the Society will become vacant shortly, and that an advertisement stating the terms under which the vacancy will be filled will appear in the *Times* and the Building News in the course of a few weeks.

CHIPS.

At a meeting of the council of King's College, London, on Friday last, Mr. David S. Capper, M.A., Assoc.M.Inst.C.E., was elected to the Professorship of Mechanical Engineering at the College.

The death sentence on Thomas Harding, the builder in Kentish-town who recently murdered a barmaid, has been commuted to penal servitude for life.

The longest tunnel in connection with the Manchester Waterworks scheme—the Raise tunnel—which extends from near Townhead, Grasmere, to the straining well at Thirlmere, and is 5,225 yards long, has been completed, so far as the boring is concerned. The tunnel has been in course of construction nearly four years.

The contract for erecting the new chancel of St. John's Church, Heaton Mersey, has been let this week for £1,399.

At a meeting of the sub-Corporate Property Committee of the Leeds Corporation, held on Friday, Mr. J. T. Micklethwaite, F.S.A., F.R.I.B.A., of Westminster, who had been called in to advise the committee respecting the restoration of Kirkstall Abbey, reported that he had visited the abbey and would issue his report in about ten days. He thoroughly approves of the action of the committee with respect to the stripping of the ivy off the walls of the abbey and taking down trees.

A memorial has just been erected in the North-west Chapel of St. Paul's Cathedral to the memory of the late Mr. John Howell and Mrs. Howell. The principal feature is a panel containing a head of Christ, crowned with thorns, sculptured in relief. The sculpture was executed by Cauer, of Kreuznacht, and the other parts by Messrs. Farmer and Brindley, of Westminster Bridge-road.

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Our Illustrations.

CONTEMPORARY BRITISH ARCHITECTS.

(SEE description on p. 93.)

ABERDEEN PUBLIC LIBRARY.

THIS is the selected design, by Mr. Alexander Brown, Aberdeen, which obtained the first place in the recent competition. The cost of the buildings, exclusive of internal fittings, is estimated at £7,500. The site is on the north side of Rosemount Viaduct, adjoining the Wallace statue, and overlooking the public gardens in Union-terrace. The building consists of three floors. The ground floor contains the reading-room, store rooms, unpacking room, and janitor's house. The lending library, committee room, &c., occupy the first floor, and the reference library is on the second floor. The walls are to be built of granite from the quarries in the neighbourhood, and the roofs are to be covered with green slates. The two main floors are to be fireproof, and building operations are to be commenced at once.

"BUILDING NEWS" DESIGNING CLUB: DESIGN FOR PARISH HALL AND SOUP KITCHEN.

(FOR description, see page 69.)

THE BREWERY HOUSE, BATTLE.

THE necessity of rebuilding the Brewery House, which is situate in a good position in the High-street within view of the Abbey, has induced the owners to permit the architect some liberty with the design, which has been prepared in harmony with the half-timber work so frequently met with in the Sussex towns and villages; a very interesting example may still be seen in the "Old Abbots' Hospital," adjoining the Abbey entrance; the introduction of half-timber will not, therefore, be out of place in the picturesque town. In the general construction the walls will be in local red-facings with Bath stone dressings, the upper stories being timber-framed in oak with rough coat, the rear being mostly tile hung, and the roofs covered with brindled tiles. Internally the work will accord with the design, the dining-room, hall, staircase, and office having ceilings framed with wrought timbers, the old wall panelling being adopted as a high dado with cornice and frieze in the hall. The accommodation will comprise two excellent sitting rooms, open staircase with private entrance, kitchen, and offices in the rear, the brewery office occupying its former position next the yard entrance; on the first floor are four bed rooms, bath-room, &c., and in the attics three good rooms. The architect is Mr. Philip Henry Tree, of St. Leonard's-on-Sea.

CAMPANILE, HOLY TRINITY CHURCH, GOSPORT.

THIS illustration, taken from the drawing now on view in the Royal Academy Exhibition, represents the new tower to this church from the designs of Sir Arthur Blomfield, A.R.A. It is reproduced from a signed perspective by Mr. Arthur C. Blomfield, M.A. The Campanile is chiefly in brick, with stone sparingly used, and a conical spire surmounts the whole.

SCULPTURE FROM THE SALON, 1890.

THE first statue, by M. A. Duverger, of 9, Rue de Chatelier, Paris, represents the "Enigma of Nature"—"O Muette Isis! Nature Impénétrable." Here the youth, typical of the true in all ages, cries for more light, and, like many aspiring souls of all ages, seeks knowledge from a source whence it can never come. The second group is "Premier Artiste—Age de la Pierre Faillée," by M. P. Richer, also of Paris. The keen natural interest of the primeval artist in the carved creation of his own hand is well realised in this statue, as this old sculptor of the Stone Age critically examines the little elephant which is now receiving his finishing touch.

HARDWICK HALL.*

THE accompanying drawing by Mr. A. E. King, of Mansfield, is a representation of the door from the landing to the council chamber in Hardwick Hall, Derbyshire, the seat of the Marquis of Hartington. The whole of the work is in oak, the panels are bolection moulded, and the pilasters enriched; the style is Elizabethan. The Lock (of which a detail is given) is an excellent specimen of the metal worker's art; the door is hung by four wrought band hinges of a substantial character.

ROYAL ACADEMY ADMISSIONS, JULY, 1890.

STUDENTS, UPPER SCHOOL.—W. A. Fenn, W. C. Howgate, A. M. Poynter, W. J. W. Roome, F. E. Smee.
STUDENTS, LOWER SCHOOL.—H. P. Adams, W. E. Barry, J. Begg, J. Borrowman, A. W. Cleaver, C. Evans, D. B. Niven, A. Dunbar Smith, D. C. Veazey, H. H. Wigglesworth.
PROBATIONERS.—H. W. Bird, J. G. Charlton, H. C. Corlette, E. E. Jordan, G. W. Marshall, P. G. Newton, G. F. Wilkinson.

CHIPS.

The Dundee Water Commissioners have instructed Mr. Watson, the water engineer, to prepare Parliamentary plans for new works, estimated to cost £47,000.

In Tuesday's list of receiving orders in the *Gazette* the names appear of George Pluckrose, Ravenscourt-gardens, Hammersmith, and Henry Oldrey, Castelnau-cottages, Barnes (trading as William Oldrey and Co.), Carlton-bridge, Westbourne-park, and Bosworth-road, and Cowley Wharf, Kensal-road, builders and contractors.

The Metropolitan Management Amendment Act (1862) Amendment Bill, which is intended to place the law relating to the flagging of footways upon the same footing as that relating to the permanent roadways, was read a second time in the House of Lords.

The new offices for the Edison and Swan United Electric Light Company (Limited), London, are being warmed and ventilated by means of Shorland's patent Manchester grates, supplied by Mr. E. H. Shorland, of Manchester.

The French Senate has adopted by 188 votes to 19 the Bill for preserving and maintaining the exhibition buildings in the Champ de Mars.

New cycle works for Messrs. Taylor, Cooper, and Bednell have been erected at Coventry, and special attention has been paid to the ventilation, which is carried out on the Boyle system.

A new boys' school, added to the existing parish day schools of the Church of St. Simon, Baptist Mills, Bristol, was opened on Monday. The total cost will be £1,000. The school is built of Pennant stone, with freestone dressings, having a length of some 75ft. and a breadth of about 23ft. Leading out of the main school is a large classroom, 24ft. by 24ft. The flooring is of wood blocks laid on concrete. Mr. E. Henry Edwards was the architect, and Mr. John Perkins the builder.

The executive committee of the Lord Napier of Magdala Memorial Fund have reversed their previous decision that on the equestrian statue about to be erected in Whitehall-place the figure of the late Field-Marshal should be without a helmet. Sir Edgar Boehm, R.A., the sculptor, had submitted two models, one with and the other without a helmet, and the former has now been unanimously approved.

* We gave views of Hardwick Hall August 17, 1888, with descriptions.

COMPETITIONS.

CAMBERWELL PUBLIC BATHS, EAST DULWICH.—In this competition, Mr. Charles Barry, F.S.A., was appointed professional assessor to the Commissioners, and the following is an abstract of the report he has made as to the designs sent in:—Seven designs were received, and six of the competitors have sent in perspective drawings. Several designs show much ingenuity in the arrangement of plan so as to meet all the requirements in the instructions. The referee studied the designs with special regard to the following particulars:—As to arrangements of the plan, as to adequate lighting and ventilation, as to sanitary arrangements, as to the scheme and arrangement for warming the swimming baths and private baths, as to the architectural design outside and inside. He recommends for acceptance the plans sent in by Messrs. Spalding and Cross, 15, Queen-street, Cheapside, which are, Mr. Barry says, "most convenient, economically arranged, well lighted and ventilated, and as to which the greatest pains has been taken by the authors to make the warming arrangements as complete and effective as possible, and with economy in working. Messrs. Spalding and Cross have taken far more pains with this subject (so vitally important in respect of public baths), than has any other competitor. They have indeed given elaborate details of two methods of heating, to which, if their design is adopted, the careful consideration of the commissioners should be given. Their design for the entrance front, although evincing much architectural ability, is however hardly sufficiently indicative of a public building, and if they be appointed architects, they should be called upon to re-consider it in this respect. It is represented in a cleverly drawn perspective in sepia only, but the materials proposed are red brick and red Mansfield stone dressings, which would produce a good effect. By very clever arrangements, Messrs. Spalding and Cross have contrived to get not only the large swimming baths, but also *all* the private baths for both sexes, and of both classes, on the same level, the advantage of which is obvious, and only in two other of the designs sent in has this been done. A good entrance is given for each sex placed on either side of a central pay office, with ticket hatches on each side, for the several classes, and for each class of private baths convenient waiting rooms are provided. The cube contents of their design are estimated at 593,072ft. and their estimate is £14,225, or at the rate of 5¾d. a foot. The cube I find practically correct; but I doubt whether a rate of 5¾d. will be found enough, although like establishments have been completed at a cost within that rate, and Messrs. Spalding and Cross express their willingness to undertake to obtain a tender from a trustworthy contractor within their estimate, and refer to the public baths lately erected at Hampstead from their designs in confirmation of this. In all cases the competitors have sufficiently complied with the instructions issued to entitle each to the honorarium of 20 guineas offered by the Commissioners." The Commissioners have, after examining the whole of the designs sent in, unanimously adopted the report of Mr. Charles Barry, and selected the design of Messrs. Spalding and Cross, subject to alterations which may be suggested by Mr. Barry, and to their obtaining a tender from a trustworthy contractor within their estimate, and the sanction of the Local Government Board. The sum of £16,000 required for the erection of these baths will include architect's fees, quantity surveyor, interest, and other contingent expenses.

A special meeting of the brethren of the Incorporation of the Guildry of Edinburgh was held on Monday for the purpose of electing an interim Dean in room of the late Sir James Gowans. There were three candidates for the office—viz., Mr. W. Allan Carter, C.E., Councillor Robert Miller, and Mr. Robert Shillinglaw, builder. A great amount of interest has been taken in the election, and some keen canvassing has been carried on by the supporters of the different candidates. Mr. Miller, who was nominated by Mr. Livingston and Mr. W. Wybrow Robertson, A.R.I.B.A., of H.M. Office of Works, was elected, the numbers being: Miller, 417; Carter, 250; Shillinglaw, 168.

A male infirmary and lavatory block are about to be added to the Joint Counties Lunatic Asylum at Abergavenny. Mr. Alfred Swash, of Newport, Mon., is the architect, and the tender of Mr. J. Linton, of the latter town, has been accepted for carrying out the contract at £3,300.

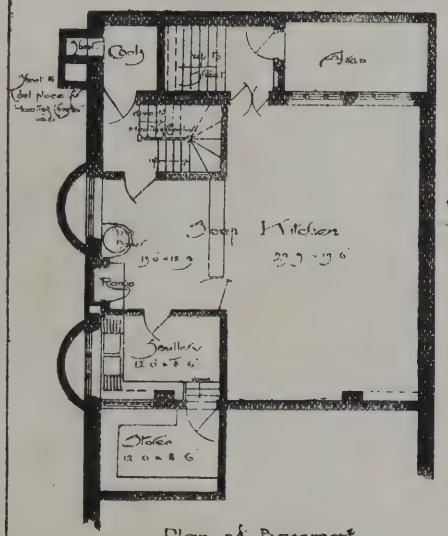
DESIGN PLACED SECOND

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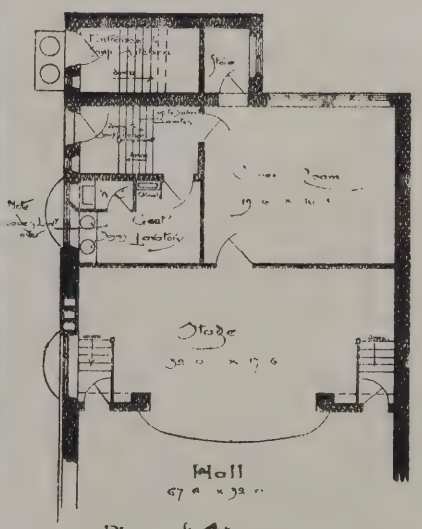
A Parish Hall

by

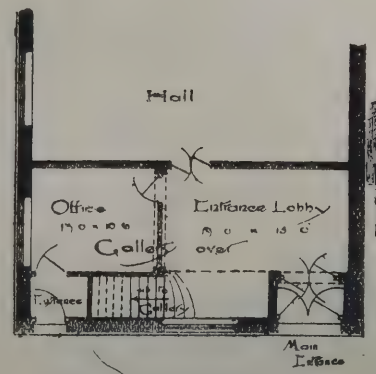
THE RED ROVER



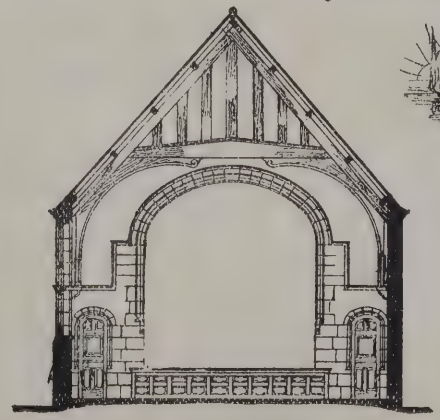
Plan of Basement



Plan of Stage



Plan of Entrance

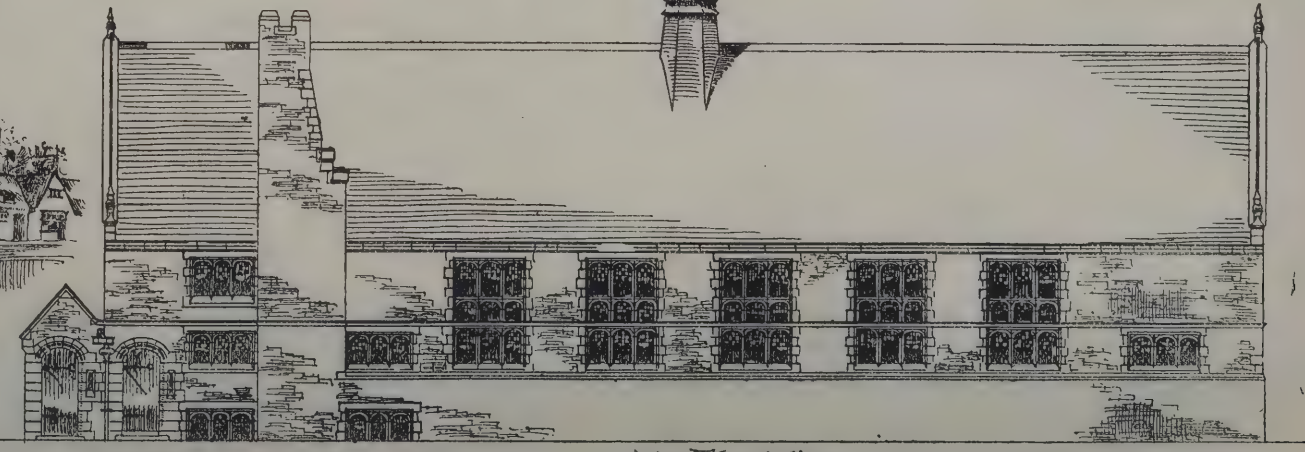


A Cross Section



Front Elevation



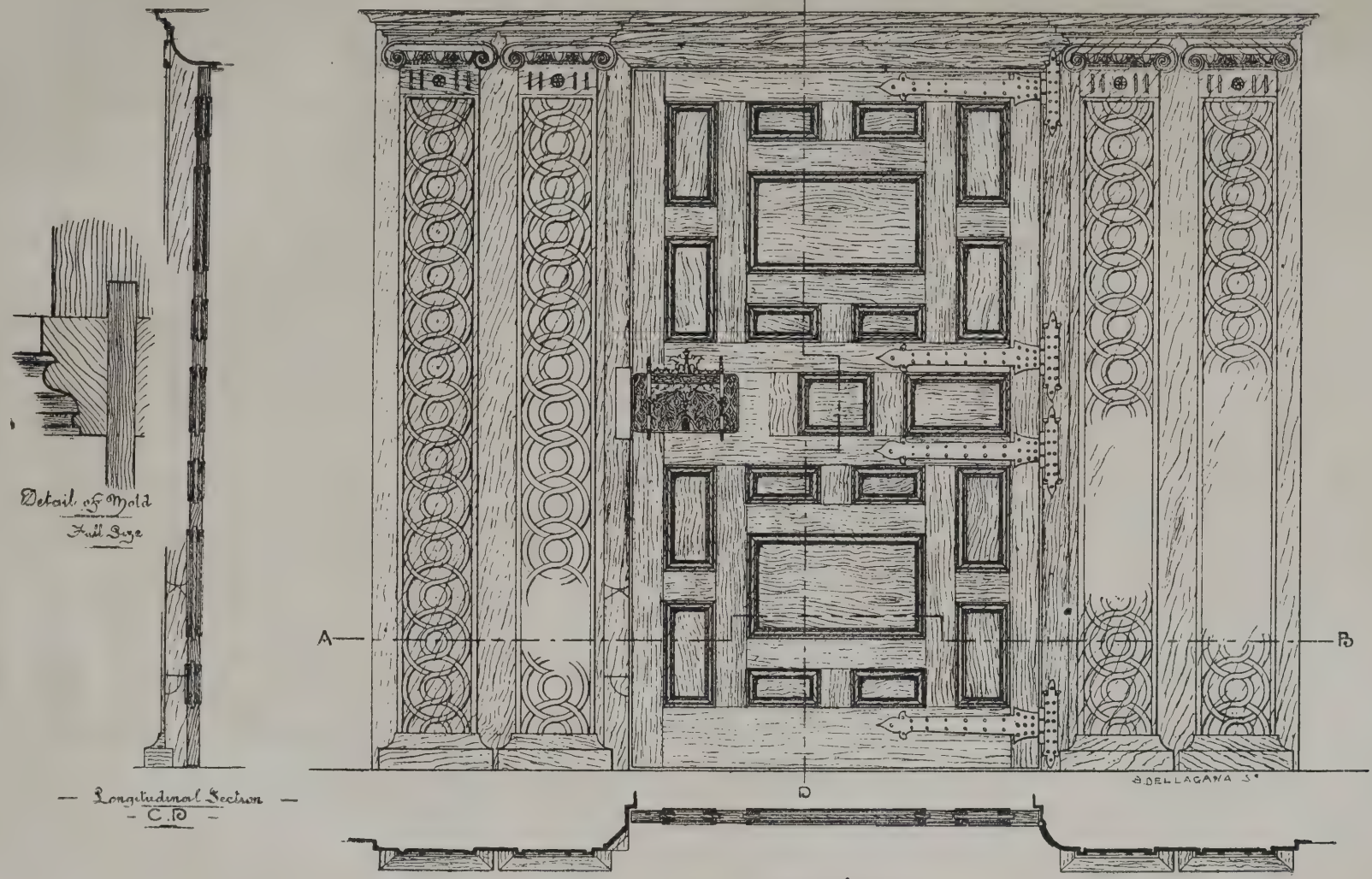


Side Elevation

B. DELLACANA-SC

Door leading to Council Chamber
From
Horsforth Hall.

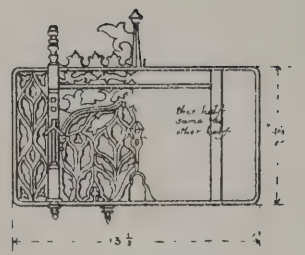
Measured & Drawn By C. E. King.
Mansfield June 1890



Detail of Mold
Full Size

Longitudinal Section
C. D

Horizontal Section
A. B.



Detail of Lock (Wrought Iron)
2 Inch Scale

Scale of Feet
0 1 2 Feet

WAYSIDE NOTES.

PROMINENT among the Metropolitan improvements proposed to be carried out by the County Council is the extension of the Chelsea embankment, at the estimated cost of £62,000. The realisation of this scheme would seem to depend upon the attitude of the Chelsea Vestry. The Vestry has agreed to contribute only £8,000 of the cost of the improvement, and as it is thought that a moiety of the estimated outlay on the works should be paid by the Vestry, matters may be delayed or come to a deadlock unless the two corporate bodies arrive at an understanding. It would be a pity if this were the end of the scheme, as the improvements would be very real and evident, if, as proposed, some acres of foul mud-banks between Battersea Bridge and the Tremorne Tap be reclaimed, and two tidal baths be constructed between the new embankment walk and the Cheyne walk. I do not comprehend exactly who is to erect the baths, lay out the gardens, and do the odd jobs in connection with the improvements; but I do think that if the County Council are going to carry out these works, they will be doing more than they need trouble themselves about whilst there are a few thousands of architects in London with spare time on their hands. If the Council construct the embankment, fill in the waste land formed by the inclosure of the unsavoury mud-banks and foreshore, and generally level over, they will be doing as much as the ratepayers expect. The architects might then get a little occupation, if not actual commissions, from the Chelsea vestry, I think that august body would inaugurate a competition for the proposed baths, gardens, &c.

Chelsea will want some sort of compensation, as appears quite probable, the famed "Physic Garden" is to disappear. It is said that Lord Cadogan desires to possess the site of this garden for building purposes. The Apothecaries' Company, who hold the ground, by gift from Sir Hans Sloane, in 1721, have, like the owner of the Arabian steed, been tempted with much gold; and it remains to be seen whether, like the Bedouin, the Company is in the end proof against the temptation. Of itself, it would doubtless accumb; but as it is likely that outside pressure and influence will be brought to bear upon it, the garden may yet remain open to the public instead of becoming covered with buildings, though it may be only through the generosity of individuals or institutions who would buy over Lord Cadogan's head, that the garden can be saved.

General Pitt Rivers writes to the *Times* of the 15th in the matter of the preservation of Bristol Antiquities. The general regrets that the few existing ancient monuments in the British Isles are neglected by their owners, who fail to take advantage of the Ancient Monuments Act. It would appear to an independent observer, however, that these advantages cannot be very pronounced. At present all the money allowed by the Government for the preservation of ancient British monuments does not exceed the sum of £200 per annum. There is not a vast number of monuments that belong to this special class; but what is £200 among them? It is certainly better than the £100 which the Government considered sufficient before General Pitt Rivers persuaded it to allow the larger annuity, and from the General's letter one gathers that the whole amount is not applied for. Nevertheless, it wou'd be well if increased funds were set aside for this special purpose and someone empowered to see that the monuments were really repaired, for according to General Pitt Rivers, who has the carrying out of the Ancient Monuments Act, interesting, unique, and, above all, purely British monuments are falling into premature decay for want of timely attention. Under these circumstances one would welcome the measure on the French "historic monument" principle, if it could be carried into execution without the hard, unsympathetic restorations which, across the Channel, often make the remedy worse than the disease.

For the past two or three years General Pitt Rivers has been doing a very useful work in having constructed, under his personal supervision, models of early stone monuments in Scotland, his object being to show the development of the Celtic cross from the primitive Chi-Ro monograms in the catacombs of Rome and elsewhere. Forty-five of these models may now be seen at the galleries of the Society of Antiquaries at Burlington House, and should be visited by those interested in old examples of what to this day—to my way of thinking—constitutes the most appropriate form of sepulchral monument. Several sets of these carefully-constructed models have been made; the museum at Cambridge has asked for one set, and another will probably be sent to Oxford; while the General intends to send one or two sets to foreign museums, in the hope, he says, of stimulating interest in a series of ancient remains of a type to be found nowhere else on the face of the globe. He points out how we largely subscribe to the preservation of ancient relics and buildings out of our own country, and expresses a hope that, on a reciprocating principle, foreigners will subscribe towards the preservation of these ancient British stones. To this I would reply, that it seems a pity that we cannot, among ourselves, stir up sufficient enthusiasm and energy, and scrape together sufficient funds to do all that is necessary without outside help.

It's come at last! In the *Standard*, at the commencement of the week, I noted some correspondence headed "The Sewer Openings," and rejoiced to think that some attention had been drawn to the system of turning foul sewer-gas into the streets—a system that is all very well in theory, but which years of practice have now proved to be a miserable and literally *fatal* delusion. Engineers have deceived themselves. It was thought, and some still think, that the frequent ventilators kept, and keep, the sewers sweet and odourless; some people, I believe, even suppose that there is a *down-current* from the ventilator to the sewer! The whole thing is a farce, as I have pointed out for years, and now that there is a chance of public attention being drawn to the matter—primarily, I may with reason think, by my last week's "note"—I hope that a heated discussion will wax in many daily papers, until every ventilator within and without the Metropolitan area is hermetically sealed, and ventilation effected by some thorough and scientific means, such as I have before suggested. Either there could be a large number of upright flues or pipes fitted with gas rings under a sheet of fine gauze, which would become red hot and destroy any disease germs, or there could be a small number of large furnaces, with shafts drawing the air out of the sewer and passing it through the fire.

Walking up Snow-hill, from the markets to Holborn, one day this week I became aware of a foulness of atmosphere that I felt could only come from sewer ventilators. Looking around, there, sure enough, were the gratings! But not *one*, or *two*, or *three*. There was a perfect concourse—a veritable *galaxy* of ventilators. I was almost standing over three, and could easily count a dozen within a child's stone-throw. Their presence in such generous abundance struck one as being positively ridiculous, and I could fancy a fiendish humour possessing the planner of the sewer system as he arranged this prodigal display of ventilators. And this sort of farce is to be found in hundreds of different corners in the metropolis, whole regiments of gratings polluting the atmosphere with foul odours, and no less really scattering disease and death, because in a subtle, indirect, and indetectable manner.

Readers will be sorry to learn that Mr. Herbert Railton has been laid up for some time with injuries sustained by an accident on board an Antwerp packet-boat, he having been engaged in sketching some of the charming bits of old Flemish towns. It appears that, through some carelessness, a trap-door had been left open between two tables in the dining-saloon, or after cabin. By comes Mr. Railton, and before he can say "pen-and-ink," is down the trap like a clown in a pantomime, landing on the back of the steward engaged in the dark depths of the hold. Fortunately, our artist did not break a hole in the bottom of the vessel, or the results would have been more serious. As it was, however, Mr. Railton managed to break two ribs, even with the benefit of the steward acting as a buffer—and this is quite bad enough. Mr. Railton is recovering slowly, and will, it is hoped, soon be quite well. As to the poor steward, history has not chronicled the exact condition in which he was picked up; but, contrary to the laws of collision and concussion, he appears to have come off better than the artist.

GOTH.

CONTEMPORARY BRITISH ARCHITECTS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

THE seventeenth sheet of portraits in this series, given to-day, commences with Mr. J. Wreghitt Connon, F.R.I.B.A., who commenced practice in Dewsbury, in 1868, in partnership with Mr. Henry Holtom. This association was dissolved in 1881, and after three years' independent practice Mr. Connon entered into partnership with Mr. C. R. Chorley, of Leeds. Alone, and in conjunction with his partners, Mr. Connon has enjoyed an extensive practice of miscellaneous character. Amongst the buildings designed by him may be enumerated some thirty Board Schools in various parts of the country; churches in Leeds, Farnley, Bury (Lancs), Croydon, Radbourne, Dewsbury, and elsewhere; chapels in Orsett, Dudley, Dewsbury, Balley, Leeds, Wakefield, and other towns. Amongst numerous houses, especial mention may be made of Oakham Hall, York, for Sir Andrew Fairbairn; and extensive additions to Gledhow Hall, for Sir James Kitson, Bart. Of public buildings, the chief have been the Leeds and County Liberal Club, Cookridge Hospital, the premises of the *Yorkshire Post* and the Central Stores at Hull of the Leeds Industrial Co-operative Society, and the Dewsbury Co-operative Society. Mr. Connon is the author of a work on "The Legal Registration of Architects," "A Guide to Kirkstall Abbey," and of many papers of professional and general interest. The portrait reproduced herewith was taken by Mr. Heslop Woods, of Leeds.

Mr. John Honeyman, F.R.I.B.A., has had a large and varied practice, sixteen churches in Glasgow having been erected from his designs, and a still larger number in other parts of the country, among which may be mentioned St. Michael's, Edinburgh; Portebello Free Church; Park Church, Helensburgh; Free West Church, Perth; Aberfoyle Parish Church. He has also designed churches erected on the continent and in Australia, and has carried out many additions and alterations. Among country houses designed by him may be mentioned Skepness Castle, and Auchamore House, in Argyllshire; Farniegair, Glenoran; Knockderry Castle, and the greater part of Helenslee, in Dumbartonshire; Craigton House, Stirlingshire; Roundelwood, Perthshire; Lynhurst, Selkirkshire. He has also designed several large suburban mansions. Among buildings of a more public character he designed the Free Library, Museum, and Picture Galleries at Paisley, given to the town by the late Sir Peter Coats; the Parochial Asylum at Paisley, and the Observatory there; the Town Hall at Helensburgh; the Home of the Glasgow Magdalen Institution at Lochburn; the Houses of Refuge for Females at Lockburn and Chapelton; the Home of the Prison Gate Mission; some extensive warehouses and several large Board Schools in Glasgow and elsewhere. He has very seldom engaged in competitions, but has been frequently called upon to act as professional assessor. He has taken a warm interest in professional matters. He was for a number of years a member of the Council of the R.I.B.A., and is a past president of the Glasgow Institute of Architects, and past Hon. President of the Glasgow Architectural Association. He is at present President of the Glasgow Archæological Society, and of the sanitary and social economy section of the Philosophical Society; and is also a governor of the Glasgow and West of Scotland Technical College. He has written papers which have appeared in the transactions of various societies, and has also contributed reviews and articles on various topics to magazines and other periodicals. He has published several pamphlets on sanitary and archæological subjects, and questions of political economy, and has also invented several things chiefly in connection with sanitary appliances, the latest being a ventilator, to which his name has been attached, which has come pretty largely into use. He assumed as partner Mr. John Kippie about a year ago, and the firm is at present engaged on several extensive works. Mr. Honeyman was educated at Merchiston School, Edinburgh, and at Glasgow University. His portrait was produced by Mr. Stuart, of Glasgow.

Mr. E. Hoole, F.R.I.B.A., was a pupil of the late James Simpson, C.E., at one time President of the Institution of Civil Engineers, whom he assisted in the design and construction of engineering buildings for the Chelsea, Lambeth, Cardiff, and other waterworks companies. Mr. Hoole

commenced practice in London in 1864. Among a considerable number of works may be mentioned Messrs. Chubb and Sons' lock and safe factory and workmen's dwellings, industrial dwellings at Whitechapel, Lambeth (Surrey Lodge), St. Pancras, Marylebone, Chelsea, Westminster, Peckham, Southwark, Bristol, &c.; mission churches at Naples, Cannstath, Belise, Kandy, Newfoundland, &c.; Lausanne College, Morley Memorial College, Lambeth; the University Settlements; Toynbee Hall, Whitechapel; Bedford College and Red Cross Hall, Southwark. His portrait is by Mr. Bassano, of Bond-street.

Mr. Hugh Stannus, F.R.I.B.A., was born and educated at Sheffield, coming to London in 1862. He was a student at the R.A. under Mr. R. Phené Spiers. He passed the R.I B.A. exam., gaining the Ashpitel Prize, in 1873; he also gained the Institute medal for an essay on "The Decorative Treatment of Constructive Ironwork," and was elected a Fellow in 1887 He is a member of the A.A.; has served as Vice-President, as Chairman of the Class of Design, as Visitor of the Elementary Class, and for some years as Secretary of the Members' Soirée, he having been the first to introduce the architectural opera in one written and composed by him, which was performed about a dozen years ago. He also inaugurated the series of A.A. trips to Italy, taking the first party in 1880, and showing the practicability. He has carried out offices at Bedford, cottages in Surrey and Gloucestershire, and alterations to mansions in Carlton House-terrace, Hampton Wick, Grafton-street, &c. Having had some success as a lecturer, he has since devoted himself more to that than to the practical side of the profession. He holds the appointments of Lecturer on Applied Art at South Kensington, Teacher of Architectural Ornament at the R.A., and Lecturer on Applied Art at University College; he is also Lecturer for the A.A. on the History of Classic Architecture, and will be one of the Cantor Lecturers for the Society of Arts next session. Mr. Stannus prepared a design for the treatment of the architectural decoration of the dome of St. Paul's Cathedral, and was engaged to make the model full-size cartoons which were fixed in the dome for public inspection. He was connected also with the completion of the Wellington Monument, from the designs of the late Alfred Stevens, the sculptor. The statue erected in Essex-street, Strand, in connection with the Unitarian Sunday School Memorial was sculptured by Mr. Stannus. His portrait is from the camera of Messrs. Hellis and Sons, Regent-street.

Mr. John Gibson, F.R.I.B.A., the Royal Gold Medallist at the R.I.B.A. this year, was a pupil of the late Sir Charles Barry, whose office he entered in 1835. In the following year, when the first premium in the great competition for the new Palace at Westminster was awarded to his master, he was his only pupil. After serving three years of pupilage he remained his master's assistant for six years, and was more or less engaged on such works as Trentham Hall, University College (Oxford), Harewood House, near Leeds, Duncombe Park, the Board of Trade, Whitehall, and above all, the Houses of Parliament, on the details of which Mr. Gibson was largely employed. Commencing practice, therefore, in 1844, after so excellent a training, Mr. Gibson appears to have entered at once on his most successful career. Among his earlier works was the National Bank of Scotland, Glasgow; the Imperial Fire and Life Office, Threadneedle-street; and the well-known and characteristic twin-spired Romanesque Chapel in Bloomsbury, which was erected in 1847. About this time he carried out many works in Warwickshire: Compton Verney, for Lord Willoughby de Broke; Wroxton Abbey, for Colonel North; Charlecote Park, for Mrs. Lucy; Guy's Cliff, and several churches. He built his ecclesiastical *chef-d'œuvre*, Bodelwyddan Church, for Lady Willoughby de Broke. Plâs Power, near Denbigh (1858), is the clever re-clothing of a once commonplace-looking house. The Todmorden Fielding Family have availed themselves largely of Mr. Gibson's skill: Mr. Joshua Fielding, at Nutfield Priory, Kent; Mr. John Fielding, at Dobroyd Castle, and Mr. Samuel Fielding, at Central Vale—both near Todmorden, where also he built the Town Hall and the Unitarian Church, for the same family. But the most remarkable of Mr. Gibson's professional connections is that with the National Provincial Bank of England. This great banking company apparently employed nobody but Mr. Gibson as their architect so long as he remained in practice. He built the head office in Threadneedle-street, and the branch bank in Piccadilly, and also upwards of forty branch banks in different parts of the country—some of them, as, for instance, that at Birmingham, of great merit and importance. In London, Messrs. Child's Bank, and the home of the Society for Promoting Christian Knowledge, the first building erected in Northumberland Avenue, where its proportions are now seen to a disadvantage from the height to which its neighbours have arisen. The following is a list of his leading buildings:—Banks: National Provincial Bank, head and branch offices, London, and branches at Birmingham, Durham, Middlesborough, Newcastle-on-Tyne, Salisbury, Southampton, South Molton, Stockton-on-Tees, Sunderland, &c.; Child's Bank, Fleet-street; the City Bank, Exeter; and the National Bank of Scotland, Glasgow. Business Premises: Society for Promoting Christian Knowledge, Northumberland Avenue; Imperial Insurance Offices, Old Broad street; the Stock Exchange and Bank Buildings, Glasgow; and the Town Hall at Todmorden. Churches: Bodelwyddan, near St. Asaph; church at Charlecote Park, and Combroke Church, Warwickshire; Plâs Power Church, near Wrexham; church on Bix Common, near Henley-on-Thames; church at Lighthorne, and Old Milverton Church, Warwickshire; the Bloomsbury Chapel; and Shenstone Church, Staffordshire. Houses: Charlecote Park, Warwickshire: restorations, new wings, &c. (1852-67); additions at Guy's Cliffe, Warwick; Woodcote, near Warwick; Nutfield Priory Mansion, Surrey; Imberhorne, near East Grinstead; Wroxton Abbey, Oxfordshire: new wings and restorations; Plâs Power, near Wrexham; Myton Grange, near Warwick; house at Highgate for Mr. F. R. Pickersgill, R.A.

Mr. Chas. E. Ponting, F.S.A., has practised at Marlborough, Wilts, since 1870, and, as usual with provincial architects, his works have been of a varied character. Amongst his new churches and restorations may be mentioned:—Mere, Overton, *Bishop's Cannings, *Broad Hinton, *Stanton, St. Quintin, the unique monastic church of Edington, *Marden, Netheravon, Pewsey, and Holt, Wilts; others partly restored under his care are Latton, *St. Mary's, Marlborough, Wanborough, Charlton, Avebury, Poulshot, and Winsley in Wiltshire, and *Down Ampney, *Tormarton, and Almondsbury in Gloucestershire, besides those in which he has added such features as fonts and reredoses. A special feature in his practice has been the number of dangerous towers to be dealt with, some instances of which are distinguished in the above list by an asterisk. Mr. Ponting issued a careful report upon the state of the Eleanor Cross at Waltham in 1887, and was architect for its recent restoration; the stones of Temple Bar, after lying on the ground for ten years and having lost the perishable marks made on them when taken down, have been successfully re-erected under his care and form a striking gateway at the entrance to Theobald's Park, Herts. New schools have been erected from his designs at Lockeridge, Savernake, and Baydon, Wilts, and a dispensary and reading-room at Kennet, new parsonages at Ogbourne and South Marston, besides enlargement in many other cases. A new wing and tower have recently been built at Theobald's Park, the seat of Sir H. B. Meux, Bart., which comprises a museum, in which has been erected the beautiful oak staircase saved from Lord Burleigh's Theobald's Palace. Deverill House, and several other private houses in Wiltshire, and the enlargement of the Manor House at Potterne, and others are from his designs. He has also dealt with the historical specimens of domestic architecture: South Wraxall and the Church House, Potterne; lodges at Worcester Park, Surrey, and some sixty model cottages, and many farm homesteads on the estates of the Baroness Burdett-Coutts, the Marquis of Ailesbury, and Sir Henry Meux have been designed and carried out by him. His design for a new Town-hall at Marlborough was recently adopted by the council, but the project is in abeyance. Mr. Ponting holds the offices of diocesan surveyor for the Archdeaconries of Wilts (Dio. Sarum) and Bristol (Dio. Glouc. and Bristol), and surveyor of Marlborough College. He has devoted much time to archæology, and contributed numerous papers to the *Archæological Journal*, *Wiltshire Archæological Magazine*, *Antiquary*, *Reliquary*, &c. He was elected Fellow of the Society of Antiquaries in June, 1888, and represents both that body and the Wiltshire Archæological Society as local secretary. Mr. Ponting's photograph was taken by Mr. W. Hawker, of Bournemouth.

Mr. Thomas James Flockton, F.R.I.B.A., F.S.I., of Sheffield, was educated in the office of his father, an architect and surveyor of considerable practice in Sheffield, and, after spending some time in London and elsewhere, commenced practice in partnership with his father in 1845. Subsequently he had for partner the late Mr. G. L. Abbott, and, more recently, the gentleman now associated with him, a former pupil, Mr. E. M. Gibbs. Mr. Flockton has, in conjunction with these gentlemen, been the architect of a number of churches, parsonages, and schools, and, in Sheffield and the neighbourhoods of Endcliffe Hall, Tapton Hall, and many other gentlemen's residences, several breweries and manufactories, many important ranges of street buildings, and of the savings bank, police offices and cells, Sheffield and Rotherham Bank, Town Hall alteration and enlargement, banqueting hall for the Cutlers' Company, Albert Music Hall, Corporation offices, parochial offices, Fire Brigade Station, Channing Hall, and Mappin Art Gallery; and also in Rochester, the new Corn Exchange; and in London, a set of offices in Mincing-Lane. He has also had an extensive practice as a surveyor, having held for many years the appointments of surveyor to the town trustees, church burgesses, and other public trusts in Sheffield, and been valuer and adviser to the corporation in the matter of an extensive scheme of street improvements, for which Parliamentary powers were obtained in 1875, and which is now on the eve of completion. Mr. Flockton was the first president of the Sheffield Society of Architects and Surveyors, in the formation of which, in 1887, he took considerable interest. His portrait (which is of special interest just now on account of the Sheffield Municipal Buildings Competition) was taken by Mr. Vander Weyde, of Regent-street, London.

Mr. W. F. Unsworth, A.R.I.B.A., of Westminster, was born in 1851, and articled to Mr. James Wilson, of Bath, in 1868. He went to France in 1872, and entered an architect's office in Paris, finding there was much work to be done after the Franco-Prussian War. Subsequently he travelled for three months, and on his return to England entered the late Mr. George Edmund Street's offices in 1873. Was there about two years, and then went to the late Mr. William Burges, A.R.A. Mr. Unsworth started practice in 1876. His first work of any importance was the Shakespeare Memorial Theatre and Library Buildings at Stratford-on-Avon. He has exhibited in the R.A., besides various drawings of the above. The following have been illustrated in our pages. The Hill, Stratford-on-Avon, for Mr. Edgar Flower; Shepherd's Spring, Hants, for Mr. William Jones-Lloyd; Sion House, co. Tyrone, for Mr. E. T. Herdman; house at Minehead, Somerset, cottage hospital, Potter's Bar, for Mr. Henry Parker; warehouse, Star Yard, Messrs. Stevens and Sons. A few of his latter works not published are:—Mr. Dunthorne's gallery in Vigo-street, W.; schools at Baron's Court, for His Grace the Duke of Abercorn; Christ Church, Woking; St. Mary's Church, Woking; restoration and addition Beckwith Knowle, Harrogate, for Mr. R. Wigglesworth; Duchy Court, Harrogate, addition, for Mr. F. Herskind; Tangley Park, Worplesdon, for Mr. C. Barclay Holland; Woodhambury, Surrey, Woking, for himself. Mr. Unsworth's portrait is from a photograph by Mr. R. Faulkner, Baker-street.

The foundation-stone of the new County Court and Police buildings at West Bromwich was laid on Friday week. Messrs. Wood and Kendrick are the architects, and Mr. J. Rowbotham the builder.

Mr. John Anthony, of Rochester, surveyor, whose name has appeared in the local newspapers of late in connection with police-court proceedings by his wife for maintenance, died very suddenly on Thursday in last week. Deceased at one time held a good position in the city, but some years ago he began to give way to excessive drinking, and the habit had dragged him down very low in the social scale. On Thursday a police-constable served him with an order of the magistrates to pay his wife £1 a week, and in the evening the same officer was called to the Rising Sun Inn, Star-hill, where deceased had been discovered dead in the w.c. The cause of death was apoplexy. Deceased was about 50 years old.

Building Intelligence.

Edgbaston.—The dedication of the new organ, ıoir stalls, and mosaic pavement recently pro-ded at St. George's Church, Edgbaston, took ace on Saturday. Altogether about £15,000 us been spent on the improvements. The organ as built at a cost of £1,500 by Messrs. Brindley d Foster, Sheffield and London. The choir alls, which are executed in English oak, are in e Early Decorated style. The ends to the ergy and men's stalls are massive, the tops rminating in carved scrolls of foliage, with gures and animals resting thereon, the clergy sks having the winged emblems of the four vangelists, and the men's stalls figures of angels ith musical instruments. On the front edge of e ends of the clergy stalls are placed, under hly crocketed canopies, the four Evangelists neath their respective emblems; and the four ajor prophets are placed in the front of the en's stalls. The fronts to the boys' desks e of open arcaded work, moulded and rved. At the back of the stalls, on the rth side, has been placed a screen of open acery and moulded work, with foliage cusps. ne stalls and screen have been designed by Mr. A. Chatwin, architect, Birmingham, and ecuted by Mr. Bridgeman, sculptor, of Lich-ld. The marble Roman mosaic pavement, nich now forms the floor of the choir and actuary, is of Gothic design; and Rouge Royal rble has been substituted for stone in the ps within and without the communion-rail. ne design is a series of five square panels, anged lozengewise. Within these panels, d surrounded by ornamental quatrefoil borders, e the Evangelistic symbols, and in the fifth nel is St. George combating the dragon. tween these panels, on a white ground, is a oll ornament, and on each side is a rich rder. The mosaic is executed principally in oes of about ½in., with others of less dimen-ns as the exigencies of the case required. The rk was designed and executed by Messrs. rke and Co, London.

Edinburgh.—At the Edinburgh Dean of ild Court last week, warrant was granted to kirk-session of the High Church to execute St. Giles' Cathedral certain operations affect-the Chambers Aisle and the construction of a ies' retiring room. In regard to the Chambers ile, it is proposed to take down the wall between north aisle and the old session-house or try, and to support the vaulting and masonry ve with a Gothic arch; to lower the existing r of this aisle and substitute a concrete or hed brick fireproof floor between the memorial e and the heating-chamber below; and to ove the present roof and plaster ceiling, and t a groined vault, with wooden roof above ered with lead—the plaster on the walls to be red off, and the walls finished and pointed, to espond with the rest of the building. The h-street elevation of the new room will monise with the Cathedral building. The itects are Messrs. M'Gibbon and Ross, derick-street, Edinburgh.

Penshaw, Manchester.—The splendid baths ch have been erected by the Whitworth tees have been formally handed over to the nshaw Local Board. The baths from to last, building and equipment, have cost t £15,500. Fronting Ashton Old-road, the ation of the building is faced with deep-red bon bricks, set in black mortar, the undercut ts and window jambs being in moulded terra-a. The front is set back about 10ft. from the , and the forecourt is inclosed with a brick terracotta boundary wall, surmounted by ght-iron railings. The entrances to the and second-class baths are placed one on side of the ticket office. Folding doors lead e first-class baths through a wide corridor, which access is obtained to the Roman and er baths and the plunge and Turkish baths. e Roman baths are reached through dressing-ms. These baths are lined with mosaic tiling supplied with hot and cold water and a er apparatus. Six slipper baths, attached to ler dressing-rooms, are of glazed earthen-without any wood framing. The walls of orridors here are all lined with white and d glazed bricks, the floors are laid with ic tiling, and the whole space is lighted from oof by raised lights. The first-class plunge-has a water area of 59ft. by 24ft. in a room measuring 72ft. by 33ft. 6in. The walls are faced with a dado of enamelled tinted and buff Aston Hall bricks, with bands and strings of red Ruabon bricks. The bottom and sides of the bath are lined with white glazed bricks. The fourteen dressing-boxes are of pitch-pine framing, and each is fitted with seat and lagged floor. Steel principals, filled in with panels of wrought ironwork, support a roof of pitch-pine spars, which are all dressed and covered with pitch-pine boarding. A sunk foot-bath is provided at one end of the room. The Turkish bath is reached by a flight of stone stairs from the end of the main corridor, and consists of a cooling-room, 26ft. by 25ft. a shampooing-room, 16ft. square, and three hot rooms, one being 22ft. by 13ft. 6in., another 22ft. by 11ft., and the third 14ft. by 8ft. 6in. The cooling-room has a partly open roof, in which are large ceiling lights filled with tinted glass. The walls are lined to a height of 7ft. 6in. with buff-coloured glazed bricks, with a band of three courses of grey bricks, and above with ivory-white glazed bricks. On one side are five dressing-boxes with pitch-pine divisions, and fitted with curtains in front. Each box contains a brass couch and a mattress. Other couches will be placed on the opposite side of the room. In one corner is an attendants' apartment. A spiral staircase leads from the cooling-room down to the first-class plunge-bath. The shampooing-room is reached by a flight of four marble steps from the cooling-room, from which it is separated by a short corridor. It is lined with white glazed bricks and lighted from the top, and is equipped with two marble shampooing slabs, two needle baths and douches, lavatory basins, and a vapour bath. The floors and ceilings of the hot rooms, entered from the same corridor, are constructed of concrete carried on iron joists, and the walls are lined with mosaic tiling of various tints and patterns. The windows are all double-glazed, the inside sashes being fitted with leaded lights of tinted glass. Lounging couches and chairs are scattered over the rooms. The second-class bathers pass into a large hall 37ft. 6in. by 12ft., lighted from the roof, and containing a stone staircase up to the gallery which runs round the plunge-bath. The bath has a water area of 76ft. by 29ft., the bathroom being 90ft. 6in. by 37ft., and 23ft. high to the springing of the roof. The walls are faced in a similar manner to those of the first-class plunge. A gallery formed of concrete 8in. thick and wrought-iron joists carried on cantilevers of the same material give access to the second-class slipper baths, sixteen in number. All the baths here are of glazed earthenware, without any wood framing. To the right of the second-class entrance are the superintendent's private office and committee-room. Subways extend under all the footways of the bath, with access to all water and steam heating pipes. The architects are Messrs. J. W. and R. F. Beaumont, St. James's-square, Manchester.

Yeadon. — Last week the foundation-stone was laid of a church at Yeadon, in the presence of a large gathering of people. It will replace a mission-room, now inconvenient and dilapidated, which was originally built as a Wesleyan chapel in the year 1766, and used as such by the Wesleyan body until 1834. The new site is at the junction of Haw-lane and Silver-lane. The style will be Perpendicular. In plan the church will consist of a nave of five bays, 64ft. long by 25ft. wide; south aisle, 11ft. 6in. wide, shallow transept, chancel of three bays, 32ft. long by 21ft. wide, with organ-chamber on the south, and clergy and choir vestries adjoining. A tower will hereafter take the place of this porch, and an octagonal turret (which will form the staircase of the future tower) is now being constructed. This turret will be finished with an open-timber bell-cot. Owing to the rapid fall of the ground the west gable of the nave will be a prominent feature, and will contain two lofty three-light windows with traceried heads, and a niche in the centre of the gable above them. The east gable of the chancel will contain a seven-light window, with tracery in the head under a four-centred arch. The treatment of the north and south sides of the nave will be entirely different. On the south is an arcade of stone pillars with moulded capitals and pointed arches, above which is a range of low clerestory windows. On the north are large windows with flat heads and tracery of simple character. The sitting accommodation will be about 350. The fittings of the chancel will be of oak, and a low stone screen wall will mark the division between the chancel and the nave. The chief cost of the building (exclusive of site) will amount to about £3,000. The chief contractors are—Mr. W. Flesher, mason's work, and Mr. James Taylor, joiner's work. The work is being carried out from the designs of Messrs. J. and F. Healey, Bradford, under the superintendence of Mr. G. H. Elliott, clerk of works.

CHIPS.

The foundation-stone of a new cottage hospital, which it is proposed to erect at Edington, near Bridgwater, in memory of the late Captain J. A. Fownes Luttrell, was laid on the 3rd inst. The hospital will consist of two wards, each 20ft. by 15ft., one for females and the other for males, with bathrooms, lavatories, &c. The doctors' room and nurses' room are built upon the ground floor, as are also the kitchen and offices for the house staff. Upstairs there will be a sitting-room and two bedrooms. The building will be of red brick. The builder is Mr. H. T. Spiller, of Taunton; and the architect Mr. C. H. Samson, of Taunton.

The spire of St. Catherine's Church, Pontypridd, Glamorganshire, about 75ft. in height, is to undergo extensive restoration. The framework and wall-plates at the bottom being perished must be reinstated, all the slates removed, framework strengthened, and the whole spire newly slated. Four new stone gablets are to be constructed at the lower part of the spire, in which will be placed a clock. The work of restoration, which will require much care, and will cost about £650, has been intrusted to Messrs. Kempson and Fowler, architects, Llandaff; Messrs. W. Thomas and Co., Bute Docks, Cardiff, being the contractors.

A new church is in course of erection for the United Presbyterian congregation of Largs, solely at the instance of Mr. John Clark, of the Anchor Mills, Paisley. In style the church is Gothic of the Decorated Period, freely treated, and depending more on its massiveness and good proportion than on elaboration of detail for effect. The total accommodation of the church is 753, exclusive of choir and elders' seats. One of the main features of the church will be the spire, rising to a height of 150ft. from the ground-line, to carry which a foundation of concrete 35ft. square has been put in. The hall, which will accommodate 230, will be finished in a simpler style than the church, and have an open-timber roof.

On Saturday Mr. Thomas Codrington, M.I.C.E., held an inquiry in the Council Chamber of the Guildhall, York, respecting the application by the York City Council to the Local Government Board to borrow £48,000 for the provision of Municipal Offices, Courts of Justice, and Police and Fire Brigade Stations; £32,594 for purposes of street improvement, and £9,291 for markets, depot, baths, and other purposes. Mr. Creer (the city surveyor) explained the plans of the new buildings.

Colonel Luard, C.E., Local Government Board Inspector, held an inquiry at Rhyl on Friday as to an application by the Improvement Commissioners for powers to borrow £350, in addition to £650 already obtained, towards extending the promenade, the board, in constructing the work, having exceeded its estimate. An application was also made for power to borrow £885 for the provision on the parades of shelters and a ladies' lavatory. There was no opposition to the applications.

The church at Winestead, Holderness, which has recently undergone a complete restoration, has been reopened by his Grace the Archbishop of York. The building was in a ruinous state, and has been repaired at a cost of £2,250, from plans by Mr. Temple Moore, of Hampstead.

The Nottingham town council has decided to support a proposal by the Manchester, Sheffield, and Lincolnshire Railway Company, under which they will seek Parliamentary powers to construct a line through Nottingham, to join the Metropolitan Railway at Aylesbury, and so form a new route to London.

The Minet Public Library, Camberwell, which has been built by Mr. W. Minet for the parishes of Camberwell and Lambeth, will be opened to-morrow (Saturday) afternoon by Sir Lyon Playfair, M.P.

The town council of Stafford, by ten votes to nine, granted Mr. Blackshaw, the borough surveyor, an honorarium of £250 for extra services performed by him in connection with the new water supply. A further recommendation that Mr. Blackshaw's salary be also raised from £250 to £300 a year was referred back to the committee.

Memorial stones of a new Liberal Club were laid at Whitchurch, Salop, on Saturday. The club will occupy the site of premises, which are being remodelled by Mr. Richard Powell, builder, of Whitchurch, from plans by Mr. J. H. Pickard.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLI., XLIX., L., LI., LIII., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—R. and N.—R. D. and Co.—Col. E.—S. of A.—T. H.—H. A.

Correspondence.

THE FRENCH CONGRESS OF ARCHITECTS.

To the Editor of the BUILDING NEWS.

SIR,—I do myself the pleasure of forwarding you a *résumé* of the report of the meeting of the Congrés des Architectes Français, held at Paris a few days ago, and trust that it may be of interest, especially as the questions discussed are under debate in England, as well as on this side of the Channel.

The first point raised was the question of establishing on a better footing the annual meetings of the Central Society—namely, by forming in advance a well-arranged programme; that each provincial society should send to the Congress a certain number of delegates, and count a number of votes in proportion to the numerical importance of the society; and, lastly, that the expenses of these provincial delegates should be defrayed by a "Caisse de Congrés," a special fund which would be maintained by the subscriptions of each society in proportion to its numerical value.

The Congress is organised by the Central Society at Paris, this Society sending forth general invitations for the meetings of the Congress to all French architects. Generally, however, only those whose business may call them to Paris, or near the place of meeting, respond to the invitation. Each member may, if he likes, put his name down to speak at the meetings, but it is rarely found that the list of speakers is too full. In this way, there being no well-arranged programme, there is generally little chance of any serious discussion. The Congress committee therefore naturally desires that a fund may be established, thus permitting each provincial society to send to the Congress a good representation of its members.

The "Commission des Honoraires," or committee of architects' fees, sent in its report for the deliberation of the general assembly.

The rule for architect's fees, which was established on the 12th Pluviôse, au VIII. (1st Feb. 1800) and which has since always stood for law, has, in the opinion of the Commission, often been applied in the case of law-suits, without proper consideration.

The Commission thought it desirable to study and develop its application to the many questions that now raise difficulties.

For 90 years, the 5 per cent. due, according to this "avis," to Parisian architects comprised ordinary work at Paris only.

The Art. 6 estimated, besides, that double the usual fee is due for the same work when executed at more than five kilomètres distance from the place of residence of the architect, the journey expenses being at the charge of the architect.

Again, "that when the work exacts, as it sometimes happens, models and drawings, occasioning extra expense, this must be paid for separately."

Thus this "avis" is vague as to the distinction between ordinary work, for which the 5 per cent. is due, and work which, being more or less artistic, demands more study and care. It determines only that the architect's fees should be graduated in proportion to the importance of the work, and its situation in reference to the residence of the architect.

The "Commission des Honoraires" wished to arrive at a more settled determination of the document, and thus, being able to distinguish between ordinary and extraordinary work, to fix the fees in proportion to the difficulty or the artistic work necessary for certain exceptional works. Again, it was thought desirable that the fees should be based on the estimated cost of the proposed work, and not on the sum dispensed after the contractor's discount was allowed. That the drawings, &c., should remain the property of the architect; also, that no one should have the right to reproduce, without the permission of the architect, any of the plans or façades originated by him.

For architects' fees, the following was proposed:—

Ordinary work	5	per cent.	For work exceeding £400.
Artistic ,,	7	,,	
Extra artistic work	10	,,	
Dangerous work	10	,,	

Below £400, 10 per cent.

Supplementary fees to be demanded in the case of surveys, obtaining authorisation to build, litigation, extra supervision, changes made by the client, special models, &c.

In the case of work being at a distance, special expenses should be paid, such as first-class railway fare, carriage and hotel expenses (average 25 francs per day), absence in the interest of the works (100 francs per day).

Consultations to be paid for at the rate of 12 francs 50 (ten shillings) per half "vacation" of one hour and a half; four "vacations" of three hours each at 25 francs producing 100 francs per day.

These figures, submitted by the "Commission des Honoraires," appeared to be slightly high as an average; doubts were also entertained by the Congress as to the application of these figures. They are, however, adopted by the Parisian architects, to whom only this tariff applies. It was proposed that a list of these fees, &c., in book form should be published and circulated.

Trusting you will excuse a rather hasty letter,
—I am, &c., ARTHUR VYE PARMINTER.
Palais des Beaux-Arts, Lille.

SPECULATIVE BUILDERS.

SIR,—There is a good time coming for the "jerry builder," as the district surveyors elected in the future can only go about the buildings between 11.0 and 4.0. What they will do sitting in their offices I cannot say. Most people find half an hour a week quite sufficient to be indoors.
—I am, &c., HIRAM.

P.S.—The "Goth" refers to the price of coal. Surely he is wrong, as coals have never been dearer than since the absurd abolition of the coal dues, a tax nobody missed, and which a fourpenny rate will have to meet.

UNDERPINNING IN THE EUSTON-ROAD.

SIR,—In your notice of the underpinning operations, your issue July 11, the address of our works should have been 18, Bermondsey-street, London Bridge; basement also has been underpinned, to allow a headroom of 8ft. 9in., not 6ft.
—I am, &c., H. J. WILLIAMS.
18, Bermondsey-street, London, July 14.

Intercommunication.

QUESTIONS.

[10315.]—**Paris.**—Will "Some One Who Knows" be kind enough to give a young architect the name of a small guide to Paris and neighbourhood having an architectural tendency? If a few chief places were mentioned which should not be missed (in a brief stay of 7 or 10 days), and at which the time could be most instructively and profitably spent, chiefly from a modern architectural and constructive point of view, it would, no doubt, be very acceptable to many readers, especially one.—ZERO.

[10316.]—**Staining New Panelling.**—I have some new oak panelling which is put into a room where there are already pitch-pine doors and architraves. The polish of these latter has been pickled off, leaving doors a darker colour. I want to stain oak and pine, so that they may be as much alike as possible (a clear, transparent deep brown of a cool colour). Can any of your readers advise best method of doing this?—X.

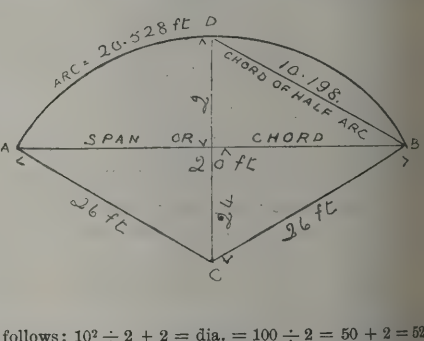
[10317.]—**Excavation.**—In the construction of a sewer, I find that there are 1,523 cubic yards of excavation. How can I find the number of cubic yards required to refill the trench after the sewer is laid and the surplus left to cart away?—STUDENT.

[10318.]—**Specifications.**—Will Mr. Lovegrove, or other authority, kindly state which he considers to be the best and most recent work on above?—INQUIRER.

[10319.]—**Architect's Designs.**—An architect finding that his designs have been used by contractors in works of their own, has the architect any ground for a claim against them? Would a clause in a specification prohibiting the use of the designs for any other work than that for which they are designed, act as a patent in protecting architects against any infringements of their rights?—A. R.

REPLIES.

[10303.]—**Area of Segment of Circle.**—If Arthur Shaw is not acquainted with trigonometry, H. Raven's reply will not, I fear, be of much use. To measure the area of a segment by mensuration, proceed as follows: Let A D B be the given segment whose span is 20ft., and rise 2ft: Rule for finding the centre of the circle of which A B is the segment is—the square of half the span divided by the rise, plus the rise, or $\left(\frac{\text{chord}}{2}\right)^2 \div$ the rise + the rise = the diameter, which, divided by 2, gives the radius. Then, to find the centre of this circle, proceed



as follows: $10^2 \div 2 + 2 =$ dia. $= 100 \div 2 = 50 + 2 = 52$ diam. $52 \div 2 = 26$ radius. Bisect A B and continue until centre is reached 26ft. from D. Join A C B C, which gives sector C A D B. Now, if we find the area of this sector and deduct the area of triangle C A B, the remainder will be the area of the segment A D B. Area of sector = length of arc A D B × ½ radius C B. Rule for finding length of arc is ⅓ (8 times chord of half arc = chord of arc). Join D B, which is chord of half arc. To find the length of D B the rule is square the other sides (2′ and D 10′), and extract the square root of their sum. $2^2 = 4$. $10^2 = 100 = 104$; square root of $104 = 10{\cdot}198$. $\times 8 = 81{\cdot}584 - 20 = 61{\cdot}584 \div 3 = 20{\cdot}528$ as length of arc. Area of sector $= 20{\cdot}528 \times 13 = 266{\cdot}864$ square feet. Area of triangle C A B = 20 × 24 = span or base × ½ the height = 20 × 12 = 240.

Area of sector ...	266·864	square feet.
Area of triangle ...	240	,, ,,
	26·864	area of segment.

—FRED. W. MCCOSKRIE.

[10309.]— **Devonshire Churches.** — "C. H. S." should examine, study, and make drawings from Ottery St. Mary, a very fine specimen of Early English; churches at Plymstock, Yealmpton, Bishop's Palace Chapel, Exeter, Frithelstock Priory, Collumpton, Totnes, Tiverton, and Bishop's Teignton—the last a Norman church. The adjoining county of Somersetshire is far richer in churches, especially the neighbourhood of Wells. Besides its fine cathedral, the magnificent church of St. Cuthbert should be visited—a fine Perpendicular church and tower; also the church of Ditcheat, with its grand central tower and wood screen across the chancel stalls and pulpit; the noble towered churches of Evercreech and Wrington—the latter has one of the grandest towers for which the county is celebrated. Congresbury Church has a fine spire; Axbridge and Cheddar, both with towers of the Western type, are worth visiting, and the pass of the Cheddar Cliffs and the caverns will well repay the admirer of natural scenery. Glastonbury Abbey, Shepton

llet, Taunton, Bath Abbey, and Bristol are other ractions.—G. H. G.

10314.]—**Ancient Lights.**—Is this question pro-ly put, as it begins by stating that the light is in the ble end, and continues that the sill is 2ft. 6in. off the ound level. Assuming that the window is near the ound, B. must be careful that the distance between his ilding and A.'s window is at least equal to the height the new building. Cannot terms be arranged?—Lovegrove.

10314.]—**Ancient Lights.**—This question will pend on how long A.'s window has been in existence, or ether it has enjoyed light for 20 years. If not, B. can ild close to A.'s window, and obstruct the light reto.—G. H. G.

CHIPS.

Mr. John Shewell Corder, of Ipswich, is about to blish a small work, illustrating the old corner ets of that town, with descriptive notes, and his io will include some picturesque sketches of the uses from the same place. The edition is limited 200 copies, and will, it is hoped, be ready early in igust.

The London and South-Western Railway Com-ny, who are largely extending their works at stleigh (till recently known as Bishopstoke) nction, have accepted the tender of Mr. Jonas chols, of Southampton, at £3,000, for building institute for their workmen on the cricket-field.

t has been decided to rebuild the Glyn Church Risca, Mon. Plans are being prepared by Alfred ash, M.S.A., of Friars-chambers, Newport.

The twenty-fourth annual excursion of the York-re Archæological and Topographical Association k place on Thursday, the 10th inst., when some members and their friends journeyed from eds and York to Cotwold, whence the Cistercian bey of Byland was visited, under the leadership Mr. W. H. St. John Hope, F.S.A.; Cotwold urch, where Mr. J. T. Micklethwaite, F.S.A., ed as guide; and Newburgh Priory, the seat of George Wombwell, a 17th-century mansion lt into the remains of an Augustinian religious use.

Memorial stones were laid in Kinsey-street, gleton, of new Primitive Methodist Chapel and ools. The chapel will seat 552 persons, and eath it will be the schools. It replaces one on same site built in 1821, and will cost £2,200. A. Tomkinson, of Tunstall, is the architect.

Mr. Zachariah Boulton, for many years surveyor the local board of Horncastle, died last week at advanced age.

The reredos in St. Austell Church was dedicated the Bishop of Truro on Sunday week. The dos is of Derbyshire alabaster, and consists of niches, having carved canopies, filled with aics representing the four Evangelists, with a e centre panel which is to be filled with statuary, a retable. The diaper work has been carved gilded. The design is by Mr. J. Piers St. yn, and Messrs. Luscombe and Son, of Exeter, e carried out the work. Mr. G. H. Fellowes ane, of London and Plymouth, has been in-cted to prepare designs for the restoration and ration of the chancel.

ew high and low level reservoirs are being ted at Penycoitre and Merthyr Dovan, for the y and Cadoxton local board, under the super-idence of Mr. J. A. B. Williams, C.E., Cardiff, consulting engineer. The contractors are Messrs. and Sons, and the high level reservoir will be pleted in the course of a month, when the le district of Barry and Cadoxton will be fully lied. Improvements at the gasworks are being ed out under the direction of the permanent neer, Mr. F. M. Harris.

The local board of Openshaw having applied to Local Government Board for sanction to borrow 350 for purposes of public walks and pleasure unds, and £1,150 for works of private improve-, an inquiry was held on Friday by Colonel I. Ducat, R.E. Mr. Mayor, surveyor to the local d, showed that the proposed park had an area ,643sq.yd., and that the streets which it is pro-d to pave and sewer are 22 in number, situated rious parts of the township.

bridge to connect the two parts of New Bromp-now separated by a deep cutting of the London, ham, and Dover Railway, is about to be erected. railway company find half the cost, and the half will be raised by public subscription. work was commenced by Messrs. Ball and mon, the contractors, on Monday.

The foundation stone of a Wesleyan Institute aid at Launceston on Friday. Tudor in style, joins the chapel, and will be built of local , with Polyphant dressings and granite quoins plinths. Accommodation will be provided in ssembly hall, on the first floor, for 125 persons, the outlay will be £650. Messrs. Hine and rs, of Plymouth, are the architects, and Mr. road, of Launceston, is the builder.

LEGAL INTELLIGENCE.

Easements in Air.—Bass v. Gregory.—This case was tried before Mr. Baron Pollock, without a jury, at the recent Nottingham Assizes, whence it was adjourned for further consideration. It was a claim of a peculiar nature—viz., to have a free passage of air allowed through a defined hole which ran from the plaintiff's rock cellar into a dry well situate in the defendant's yard. This well was covered by a grating, and the defendant had practically stopped this up. The plaintiff is the owner in fee of the Jolly Anglers publichouse at Nottingham, to which the cellar in question in attached, and the defendant is owner of cottages and a yard adjacent thereto. Besides disputing the facts, the defendant's counsel contended that the right to air did not come within the words "or other easements" in section 2 of the Prescription Act (2 and 3 Will. IV. c. 71), and that it had never been decided that such a right could be acquired even by immemorial user.—Mr. Baron Pollock, in giving judgment in the Court of Queen's Bench on Tuesday, stated the nature of the plaintiff's claim as owner in fee of the Jolly Anglers publichouse; she rested it on uninterrupted user from time immemorial, and use and enjoyment for fifty years. The plaintiff further relied on the Prescription Act and the presumption of a lost grant. There was also an assertion of an express grant; but no evidence was adduced in support of it. The plaintiff's case was that the defendant had removed a grating across the well, and prevented the passage of air up through the well, and she claimed damages and an injunction. There was a counter-claim by the defendant for trespass done to his premises, but nothing turned upon that. The fact to be decided was: Had the plaintiff established her claim? It was said for the defendant that the claim was of so peculiar and novel a character that no judge or jury ought to presume the existence of such a right. But those who knew Nottingham were aware that such excavations of the rock were frequent there, and the cellar would be practically useless without ventilation. He found as a fact that there had been communication for 40 years between the plaintiff's cellar and the old well, by means of which the air, some of which was tainted by the brewing materials, passed through the well into the open air, and that the well became the ventilating shaft to the cellar, and that this was known to the defendant and those occupying before him. His Lordship referred to "Bryant v. Lefever" (4, C.P.D., 172, C.A.), "Webb v. Bird" (10 C.B., N.S., 268; 13 C.B., N.S., 841; 31 *L.J.*, C.P., 335), "Chasemore v. Richards" (7 H. of L. Ca., 349), "Gale v. Abbott" (8 *Jur.*, N.S., 987), "Dart v. Auction Mart Company" (L.R. 2, Eq., 238). What legal foundation had been brought forward for the plaintiff's claim? She relied on the Prescription Act and on the lost grant. It was unnecessary to decide the former point, though it would appear to be so from the language of Lord Selborne in "Angus v. Dalton" (6 App. Ca., 470, at p. 798). It was said that the fiction of a lost grant was an unreasonable one, but all civilised countries had acted on it, and where a right had been found to exist for a certain number of years the law ought to presume a legal origin for it (see Mr. Baron Parke's observations in "Bright v. Walker," 1 C.M. and R., 217); and this rule had been acted on in courts of law and by the House of Lords in "Angus v. Dalton." He thought, therefore, the Court had a clear right to presume a lost grant. The plaintiff had properly laid her case, and there would be a verdict for the plaintiff for £10 damages, and an injunction restraining the defendant from doing any of the acts complained of, and as to the counter-claim of the defendant, a verdict for the plaintiff. Mr. Harris, as to costs, said the defendant was anxious to avoid going to law from the very first, and wished to go to arbitration; and he also begged his Lordship to make some suggestion as to the settlement of the action. His Lordship thought the best thing for the parties to do, instead of spending their money in litigation, was to take an architect's opinion as to what should be done, abide by it, and make a smaller outlay in bricks and mortar. Mr. Appleton said the plaintiff's claim was only for nominal damages, and therefore he only craved a verdict for 40s. damages with costs, and also on the counter-claim. This his Lordship granted.

Hedge and Ditch Boundaries.—Fisher v. Henwood.—This case, heard by Mr. Justice A. L. Smith without a jury, arose out of a question of boundary between the owners of adjoining land at Chingford, Essex. The parties had respectively purchased two fields which adjoined, the boundary between which had originally been indicated by a hedge and a ditch on the field of the defendant. That is, the former owner of the defendant's field had, as is usual, dug to the limit of his own land to its uttermost limit, had dug a ditch, and thrown up the earth along the line of boundary, and on that bank set up the hedge, so that the ditch, of course, would be inside his land and would belong to him, and hence the well-established rule of law that when there is a hedge and a ditch along a line of boundary the ditch is taken to belong to the party whose land is on the other side of the hedge. This hedge, however, was old, and though it had been formed of thorn-bushes, it had become nearly destroyed; while, on the other hand, the ditch had become shallowed as well as widened, and so had become nearly so far obliterated that it was now difficult to trace either hedge or ditch, and so disputes arose between the parties as to the real boundary between their fields, and the plaintiff conceived that the defendant had all along the line of the boundary encroached about 2ft. on the land of the plaintiff. In the mean time, the land was thrown into the market for building purposes, and with that view a fence was put up, and hence the present action, in which the plaintiff complained of the defendant for trespassing upon his land, and the defendant denied that he had so encroached. Mr. Justice Smith, in giving judgment on Friday after a two days' trial, said the real value of the land in dispute could not be more than £5. The law was undoubted that where there was a hedge and ditch between two adjoining pieces of land—the land of the party on whose land the hedge abuts goes into the ditch outside the hedge. The reason of this was clear—that the party making the hedge had made it at the uttermost edge of his own land, first digging the ditch and throwing up the bank on which the hedge is set up. His own opinion was that the old hedge and ditch could be traced, for thorn-bushes lasted for generations, and it would be almost impossible to obliterate them. It was not shown who put up the old hedge; but it was shown that the ditch was on the land of the defendant, and it could not be supposed that he would have set up the hedge on the land of the plaintiff, as that would have been a trespass. The hedge had disappeared, and the ditch had become by degrees filled up. But it appeared that the plaintiff had not made out his case, and so judgement would be for the defendant, with costs.

Surveyors' Charges.—Buckland and Garrard v. Pawson and Company.—An action was tried on Thursday and Friday to recover £95 balance, due for work done by the plaintiffs as surveyors. The charges were based on what is known as Ryde's scale. The defendants admitted the services rendered, but said that the charges were not fair and reasonable. The evidence for the plaintiffs was that there was a custom, in the absence of any bargain, to pay according to Ryde's scale, irrespective of difficulty and time occupied. Mr. Asquith, Q.C., for the defendants, cited "Debenham v. King's College, Cambridge," and "Drew v. Josolyne," to show that there was no custom between surveyors and their clients by which the former could base their account on Ryde's scale. Mr. Justice Day, in giving judgment, said the question was whether the plaintiffs were or were not employed upon what was known as Ryde's scale. The evidence in the case was not sufficient to establish a custom, but there was abundant evidence that Ryde's scale was generally known, and was the ordinary mode of remuneration of surveyors. The plaintiffs were employed by Mr. Vigers, who, it was sworn, had employed others and had himself been employed on Ryde's scale. There was overwhelming evidence that the persons whom the defendants intrusted with the duty of employing a surveyor were well acquainted with the custom. There would be judgment for the plaintiffs for the amount claimed.

A new Lady altar has been solemnly blessed in the Church of Our Lady, St. John's Wood. It is constructed entirely of marble and alabaster, and has for its frontal a group, in alto-relievo, of Pentecost. The reredos is of stone and alabaster, deeply recessed into the wall. It has a projecting canopy, supported by detached pillars of polished alabaster, with carved capitals, and is crowned by a moulded and pierced cornice and brattishing. In the projecting cove the dove is carved, surrounded by seven angelic forms, each with six wings. In the centre of the reredos is, enshrined, a copy of the well-known picture of "Our Lady of Good Counsel." The side wall of the chapel is diapered in stonework. The work has been executed by Mr. Anstey from the designs of Mr. S. J. Nicholl, the architect under whose care the restoration of the church after the fire last Christmas has been carried out.

Brunswick Chapel, Leek, was reopened last week after alteration and improvements. The galleries have been lowered *en bloc* 2ft., the front of the orchestra gallery has been extended, and provided with a new coved ceiling, and the pulpit has been replaced by a rostrum, and the whole interior of the chapel redecorated. Messrs. J. and J. Mathews were the contractors for the woodwork and other builders' works, Mr. G. T. Stevenson for the decoration, and Mr. Mark Sutcliff for the heating apparatus, and the architects were Messrs. W. Sugden and Son, of Leek. The chapel was built in 1856 by the father of the Messrs. Mathews to the plans of Mr. Sugden, sen.

Our Office Table.

A SERIES of gifts, the money value of which represents over £200,000, were presented to the city of Manchester, yesterday (Thursday), when the new Whitworth Park and Institute were formally opened. Whitworth Park was formerly known as Potter's Park, and with Grove House, which stands in the ground, was purchased by the residuary legatees of Sir Joseph Whitworth. The park and adjoining land cost £52,000, and in it are to be built, also at the expense of the Whitworth legatees, some art galleries and a technical museum, Grove House being at present used as a temporary museum. Another plot of land is given by the legatees in the city of Manchester, valued at £35,000, on which a technical school is to be erected. The legatees also give £50,000 to be used in the equipment of the Institute. Mr. Oliver Heywood, on behalf of the authorities of the Manchester Jubilee Exhibition of 1887, presented to the Institute the surplus from the Exhibition, amounting to over £40,000, £10,000 of which is to be appropriated to the School of Art, £20,000 to the purchase of works of art, and the remainder to the purposes of a technical school. Mr. William Agnew presented, on behalf of Mr. G. F. Watts, R.A., that artist's well-known picture, "Love and Death," as the first donation towards the furnishing of the Institute. The Duke of Westminster has given a series of large casts of great value, taken directly from the original sculptures in the Galleries at Florence.

THE death is announced of Mr. Robert William Mylne, F.R.S., F.S.A., F.G.S., of Whitehall-place, S.W., which occurred suddenly at his residence, Home Lodge, Great Amwell. Mr. Mylne was a descendant of the Mylnes of Balfargie, who for several generations held in succession the office of Master Mason to the Kings of Scotland; his grandfather, Robert Mylne, was surveyor of St. Paul's Cathedral, and designed the bridge at Blackfriars, removed a quarter of a century since. The deceased held the post of surveyor to the Stationers' Company, having been appointed in succession to his father, Mr. William Chadwell Mylne, C.E., who himself had succeeded his father, Robert Mylne. The Stationers' Company do not intend to appoint a successor at present. He had been a member of the Royal Institute of British Architects for more than half a century, having joined as an Associate in 1839, and became a Fellow ten years later.

A PUBLIC meeting will be held at the town-hall, Kensington, on Wednesday next, at four o'clock in the afternoon, under the presidency of the vicar of the parish, to receive a report of the progress which the system of Registration of Plumbers has made since it was first established in London in 1886, and extended, by the aid of the public authorities, throughout Great Britain and Ireland. Measures will be considered for securing the systematic training and instruction of plumbers' apprentices, and education in the branches of science and technology required by persons engaged in works affecting the sanitary condition of dwelling-houses and other buildings in respect of their water supply and drainage. The attention of Parliament and the public generally will be directed to the anomalous circumstances that, while it has long been the practice to require that medical practitioners, druggists, and others—architects being most anomalously excepted at present—dealing with matters affecting the health of the community should possess sufficient training and prove their qualification before undertaking their duties, there is not at present any corresponding safeguard to the public in respect of plumbers, upon whose efficiency the health of the public is even more largely dependent.

SEVERAL important additions have recently been made to the Italian Renaissance casts of sculpture in the architectural room at South Kensington. Chief among these additions is the great Della Robbia frieze which adorns the façade and sides of the Ospedale del Ceppo at Pistoja, and which was completely illustrated by a series of double-sheet plates in our issues of Jan. 6 and 13, 1888. This, the principal work of Andrea della Robbia's son Giovanni, now reproduced in facsimile at South Kensington, with all its bright scheme of polychromatic decoration, presents in a series of groups of life-size figures the Seven Acts of Mercy, divided by the symbolical figures Faith, Hope, Charity, and Justice. It was executed as lately as 1525, within three years of the death of Giovanni della Robbia. Unfortunately, the South Kensington authorities have not found space for the intervening panels containing the figures of the Virtues. Among other new casts may be noticed those of the "Madonna and Child," by Donatello, from the façade of the Palazzo Panciatichi at Florence, and of two similar marble decorations of great beauty by Benedetto da Majano. There is also a series of reproductions from the bronze tomb of S. Zenobia, completed by Lorenzo Ghiberti in 1446 for the central apsidal chapel of the Duomo at Florence. The cast of the great font at S. Giovanni in Siena has been improved by the gilding of the relief panels and the statuettes by Donatello, Ghiberti, and Giovanni di Turino, which in the original are of gilt bronze. Among new reproductions of French art are the so-called "Beau Christ d'Amiens," and reliefs showing the martyrdom of saints, from Notre Dame at Paris, and wooden doors from S. Maclou at Rouen—a masterpiece of the earlier time of Jean Goujon,—reliefs of the same master from the Fontaine des Innocents and the Hôtel Carnavalet in Paris, and a section of the stone rood screen of Limoges Cathedral, executed in 1543.

Mr. R. J. WITHERS, architect, of 11, Adam-street, Adelphi, has lately patented a tile with a cross nib, or two nibs, *on the soffit*, and is having some manufactured to introduce to architects, who, we think, will find them useful for adoption. The number of tiles on roofs—and more particularly hanging tiles on walls—that drop off after a few years' exposure, have led Mr. Withers to try and find out some mode of easily replacing same. By the use of his patented tiles he hopes to find he has succeeded, more especially if they can be, as he thinks, manufactured at but a slight increase in cost over the ordinary nib tile. The tiles can be made to any gauge or lap; no lines or setting-out are needed; the gauge of tiling is assured; they are equally suitable to boards or battens; increased strength is assured; they are easy to fix and replace, and certainly invaluable as hanging tiles.

WATER SUPPLY AND SANITARY MATTERS.

HAYES DRAINAGE.—At the last meeting of the Uxbridge Union Rural Sanitary Authority, the Board adopted a scheme for the drainage of Hayes. The sewage is to be precipitated in tanks with ferrous carbon, and the effluent passed through "polarite" filter beds. The cost of the work is estimated at £10,500. Mr. F. Beesley, of Westminster, is the engineer.

MOLD SEWERAGE.—Mr. W. H. Radford, C.E., of Nottingham, has been requested by the Mold local board to draw out a scheme for the sewage disposal of the whole town of Mold, and for the sewerage of a portion of it. On Monday Mr. Radford met the members of the board, and inspected the whole of the district; and he will take levels and prepare a scheme forthwith.

CHIPS.

A branch bank for the Manchester and County Bank is now being erected at Withington. The architects are Messrs. Mills and Murgatroyd, Manchester, and the builder is Mr. Robinson, Hyde. The carving is being executed by Messrs. Howarth Bros., of Manchester.

The portrait of Professor Playfair, which was purchased at the Stoner sale of pictures for 210 guineas, by Mr. Agnew, is to be placed in the Scottish National Gallery at Edinburgh.

The Birmingham City Council decided on Tuesday to raise the salary of Mr. J. T. Buckley, road surveyor, from £400 to £500 per annum.

A new branch bank is to be built for the Birmingham and Midland Banking Co., situate in Kirkgate, Leeds, from the designs of Mr. William Bakewell, architect, Leeds.

The annual meeting of the Royal Archæological Institute will be held at Gloucester between the 12th and 19th of next month.

At the meeting of the County Council for Surrey held at the Sessions House, Newington, on Tuesday last, the sketch plans for the county buildings to be erected at Kingston were approved, and the architect, Mr. C. H. Howell, was instructed to prepare the necessary working drawings and specification. The design comprises a hall, council chamber, a court for Quarter Sessions, committee-rooms, and other accommodation required for the business of the council and of the court.

Trade News.

WAGES MOVEMENTS.

EXETER.—On Friday last the Carpenters' and Joiners' Strike Committee called out all the men in the trade. In answer to the summons about 70 men came out. There are still others at work, but there are now on strike 154 men, society and non-society. About 100 men in a batch during the day visited various firms in order to prevail upon their fellow workmen to drop their work and join the strikers. The Strike Committee have signified their intention to form a Co-operative Building Society in the city, the profits to be equally divided among the men.

LIVERPOOL.—At a joint meeting of the members of the Alliance Association and Amalgamated Union of Cabinetmakers held recently, it was resolved "to solicit the employers for an advance of 2s. per week in wages, and to be paid extra for overtime, as in the case of artisans generally." With respect to the terms of advance it was decided: "To date from August 1; that the wages of cabinet-makers, chairmakers, carvers, turners, and cabinet machinists be advanced 2s. per week all round, all time to be paid by the hour, and all lump work to be abolished. The terms were submitted on Monday to the principal employers in Liverpool, the deputation explaining that it is 16 years since they asked the employers of Liverpool for an advance of wages, which they generously granted on that occasion. A meeting of the joint committees of the Cabinetmakers' Societies, under the presidency of Mr. Edward Jones, was held in the evening, when the deputation reported that many of the firms had intimated their willingness to comply with the demands of the men, but others would only concede part of the demands.

MEDWAY CEMENT WORKERS.—A strike of cement labourers occurred on Tuesday at Cliffe factories, near Rochester, several hundred men being out. Towards evening the strikers became very turbulent, and several conflicts occurred between sections of the union and non-union men.

BARNSLEY.—On Thursday, the 10th inst., a friendly conference of the representatives of the master masons and the men took place at the King's Head Hotel, Barnsley, and resulted in the dispute, so far as the masons are concerned, being settled. Through the intervention of Mr. Councillor Sykes, who saw the leaders on both sides, the Mayor (Ald. Wood) and Mr. Ald. Marsden, as President of the Chamber of Commerce, sat and heard the matters in dispute argued by two representatives—Messrs. Taylor and Lawton—for the builders, and Messrs. Pashley and Dickenson for the men. The arbitrators advised the builders to concede the halfpenny per hour, and they agreed to do so, making the standard rate 8½d. per hour. The men wished to introduce a new rule, that no employers should be allowed to sub-let any mason work that may have been contracted for in the district, except hammer dressing. This was objected to, and ultimately withdrawn. The dispute is therefore settled.

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TENDERS.

*** Correspondents would in all cases oblige by giving e addresses of the parties tendering—at any rate, of the epted tender: it adds to the value of the information.

ABERGAVENNY.—For building male infirmary and lava- ry block at the Joint Counties Asylum, Abergavenny. r. A. Swash, 3, Friars Chambers, Newport, Mon., archi- t:—

Price, W., Newport	£4,123 0 0
Davies, D., Cardiff	4,088 0 0
Jenkins, Bros., Swansea	3,800 0 0
Krauss, A., Bristol	3,631 0 0
Foster, T., Abergavenny	3,550 0 0
Williams, J. D., Knighton	3,498 0 0
Church, W., Bristol	3,494 0 0
Linton, J., Newport, Mon*	3,300 0 0

* Accepted.

BARRY DOCK.—For the erection of showrooms, offices, and officials' residence, for the Barry and Cadoxton Gas and Water Co.:—
Aird, J., and Sons, London (accepted).

BAYSWATER.—For entire redrainage of No. 1, Sunder- land-terrace, Bayswater, for Mr. P. Wooley. Mr. H. Huntly-Gordon, 123, Cannon-street, London, E.C., archi- tect:—
Clarke and Mannooch (accepted) by schedule.

BECKENHAM.—For the erection of villa residence at Scott's-lane, Beckenham. Mr. A. L. Guy, A.R.I.B.A., 78, High-street, Lewisham, architect and surveyor:—

Jerrard	£1,239 0 0
Knight	1,169 0 0
Soper	1,145 0 0
Kennard (accepted)	1,080 0 0

BERMONDSEY.—For the erection of additional factory at Kintore Works, Grange-road, Bermondsey, S.E., for Messrs. J. H. Thomas:—

Pritchard, W. H.	£327 0 0
Rider and Son	318 0 0
Williams, H. J., 18, Bermondsey-street (accepted)	310 10 0

BRADFORD.—For the execution of repairs and altera- tions required at farm-buildings at Rooley-lane, for the town council:—
Cooke, W. (accepted) ... £153 12 6

BRIXTON HILL.—For forming road and sewers, Raleigh Hall Estate. Mr. W. N. Dunn, 1 and 2, Bucklersbury, E.C., architects:—

	A.	B.
Osenton, G., Westerham	£2,791	£2,548
Bottom, L.	1,987	1,562
Mayo, R.	1,935	1,610
Blackmore, T.	1,845	1,505
Peill, E., and Sons	1,720	1,480

A.—Including curb and chalk. B.—Exclusive of curb.

BURSLEM, STAFFS.—For additions to manufactory, for Messrs. Doulton and Co. Mr. A. R. Wood, Tunstall, architect. Quantities by architect:—

Clark, J. T., Hanley	£1,178 0 0
Proctor, J., Tunstall	1,140 0 0
Yorke and Goodwin, Tunstall	1,124 10 0
Bennett, H. N.	1,109 0 0
Bowden, J.	1,100 0 0
Brindley, J.	1,100 0 0
Grant, W.	1,080 0 0
Longden, J. J.	1,040 0 0
Cope, C., Tunstall	984 0 0
Cooke, W. (accepted)	968 0 0

Rest of Burslem.

BOWEN, LINCOLNSHIRE.—For alterations to new pump- ing engine, for the South Fen Drainage Trust:—
Watts and Co., Leadenhall-street, E.C. (accepted) £330

BURY ST. EDMUND'S.—For the erection of the new Alliance Assurance Company's offices, Abbeygate-street, Bury St. Edmund's. Mr. J. S. Corder, Wimbourne House, Ipswich, architect:—
Shillitoe and Sons (accepted) ... £3,030 0 0

CANTERBURY.—For outside painting, concreting floors, and walls of basement at the Museum, for the Canterbury Corporation. Mr. F. Baker, C.E., city surveyor:—

Gentry	£58 5 0
Cozens	57 0 0
Wiltshier (accepted)	52 8 0

CHISLEHURST.—For alterations and repairs to the Crown p.h., Chislehurst, for Messrs. H. and V. Nicholl, Ltd. Mr. A. L. Guy, A.R.I.B.A., 78, High-street, Lewisham, architect and surveyor:—

Pritchard	£69 10 0
Robson, C.	68 0 0
Hoare, P. (accepted)	66 0 0

CRANBROOK.—For carrying out works of drainage at Frittenden, for the Cranbrook rural sanitary authority:—

Davis and Leney, Goudhurst	£56 7 6
Shilling and Co., Headcorn	55 0 0
Jenner, C. E., Cranbrook	49 0 0
Brattle, Frittenden (accepted)	44 5 0

CROYDON.—For rebuilding the Railway Bell, Nalder and Collyer's Brewery Co., Ltd. Mr. F. West, Croydon, architect:—

Marriage, Croydon	£2,780 0 0
Smith and Sons, South Norwood	2,637 0 0
Taylor, Croydon	2,531 0 0
Bryan, South Norwood	2,353 0 0
Page, Croydon	2,305 0 0

CROYDON.—For the erection of workshops, Bynes-road. Mr. F. West, Croydon, architect:—

Bryan, South Norwood	£799 0 0
Marriage	740 0 0
Page	678 0 0
Taylor	661 5 0

Rest of Croydon.

CROYDON.—For alterations to the Telegraph, for Crow- leys' Brewery Co. Mr. F. West, Croydon, architect:—

Page	£195 0 0
Pearce	190 0 0
Bullock	180 0 0
Goulder and Glasscock	184 0 0
Bristy and Co.	179 10 0

All of Croydon.

DALSTON.—For repairs to 203, Queen's-road, Dalston. Mr. H. Huntly-Gordon, 123, Cannon-street, London, E.C., architect:—
Eddie, R. (accepted).

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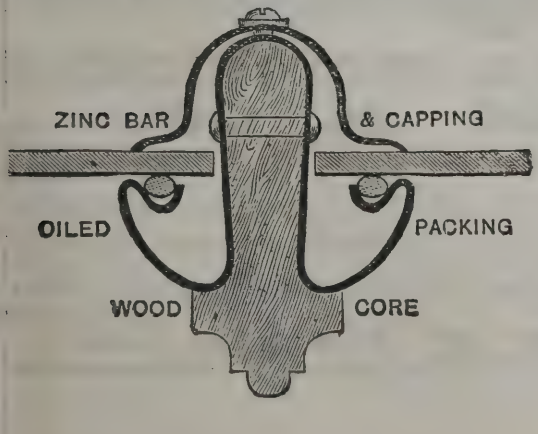
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COLDRED.—For repairing the parish church of St. Pancras, Coldred, Kent, for the Rev. C. B. Shirres. Mr. E. P. Loftus-Brock, F.S.A., architect:—

Wilson, Canterbury	£463 9 0
Stiff, Dover	397 0 0
Adcock, Dover (accepted)	390 0 0

EXMOUTH.—For the erection of new board schools:—

Jones, T., Crediton	£3,728 0 0
Grace, F.	3,040 0 0
Hooper, H. H.	3,000 0 0
Hayman, S., Teignmouth	2,957 0 0
Perry, W. H. (accepted)	2,900 0 0
Hayman, A.	2,260 9 0

GLAMIS, N.B.—For the erection of new farm-buildings at Easter Ingleston, for the Earl of Strathmore. Mr. J. A. Ferguson, Glamis, architect:—

(Accepted tenders.)

Mason:—Johnston, J., Glamis.
Joiner:—Johnston, G., Glamis.
Slater:—G. Donald, Forfar.
Plumber:—Langlands, D., Forfar.
Plasterer:—Doig, J., Forfar.

GLAMIS, N.B.—For additions to farmhouse at Nether Hayston, for the Earl of Strathmore. Mr. J. A. Ferguson, Glamis, architect:—

(Accepted tenders.)

Mason:—Johnston, J., Glamis.
Joiner:—Ogilvy, C., Kirriemuir.
Slater:—Shepherd, A. and C., Forfar.
Plumber:—McBeth and Milne, Forfar.
Plasterer:—Doig, J., Forfar.

HANLEY.—For the erection of school for 916 children, in two blocks, in Glass-street, for the school board:—

	A.	B.
Kite, J., Salisbury	£4,623	£9,120
Bradney & Co., Wolverhampton	4,074	7,949
Bennett, Burslem	3,950	7,800
Ellis, G., Hanley	3,875	8,000
Goodwin, Hanley	3,775	7,799
Cornes, C., Hanley	3,775	7,275
Booth, E., Burslem	—	7,632
Inskip, London	3,721	7,217

A.—Boys' dept. B.—Girls' and infants' dept.

HASTINGS.—For additions and alterations to Strathblane, Laton-road, for Mr. G. R. Simkin. Mr. G. F. Burr, M.S.A., 27, Havelock-road, Hastings, architect:—

Moon and Garner	£420 0 0
Warman, W. E.	360 0 0
Harman, C. and E. (accepted) ...	350 0 0

LEEDS.—For the erection of a refuse destructor of ten cells in Kidacre-street, near Hunslet goods station, for the Leeds town council:—

Pullen, J. (accepted)	£4,485 0 0

LEEDS.—For the extension of the disinfecting station at Burmantofts, for the Leeds town council:—

Irwin and Co. (accepted).

LEWISHAM.—For the erection of four villa residences at Hither Green-lane, Lewisham. Mr. A. L. Guy, A.R.I.B.A., 78, High-street, Lewisham, architect and surveyor:—

Sanders	£1,800 0 0

LEWISHAM.—For alterations and repairs at the Plough p.h., Lewisham, for Messrs. H. and V. Nicholl, Ltd. Mr. A. L. Guy, A.R.I.B.A., 78, High-street, Lewisham, architect and surveyor:—

Phippen, W.	£130 0 0
Pritchard	85 10 0
Hoare	80 0 0
Fisher, J. (accepted)	59 0 0

LEWISHAM. — For the furnishing of the Lewisham Grammar School for Girls, for the governors. Mr. A. L. Guy, A.R.I.B.A., 78, High-street, Lewisham, architect and surveyor:—

Hammer, G.	£,1058 0 0
Wake and Dean	936 0 0
Educational Supply Association* ...	888 0 0

Blinds:—Beck, G. £55

* Accepted.

LISKEARD.—For the external decoration of the Guildhall and the Council Chamber, for the corporation:—

Coath, C. (accepted)	£77 0 0

LONDON.—For alterations to No. 13, Endsleigh-gardens, Euston-square, N.W.; also for entire reconstruction of sanitary arrangements and redecoration throughout, for Mr. F. M. Corner. Mr. H. Huntly-Gordon, 123, Cannon-street, London, E.C., architect:—

	Section 1.	Section 2.
Kirby and Chase ...	£955 0 0 ...	—
Scrivener	867 0 0 ...	—
Clarke and Mannooch	727 0 0 ...	£507 0 0*
Greatorex	706 0 0 ...	540 0 0
Toten, H., and Sons ...	682 10 0 ...	510 0 0

* Accepted.

LONDON, E.—For alterations, &c., to the Dartmouth Arms, Budder-street, Canning Town, E., for Mr. Southgate. Mr. C. J. C. Pawley, 66, Victoria-street, Westminster, S.W., architect. Quantities by Mr. W. W. Browne, 1, Boxworth-grove, N., building surveyor:—

Dearing, C., and Son	£1,393 0 0
Deacon, A. M.	1,171 0 0
Turtle and Appleton	1,090 0 0
Colwill, F.	1,088 7 0
Mansbridge, J.	1,016 0 0
Gill, F.	987 0 0

LEWISHAM.—For the erection of caretaker's lodge at the Lewisham Grammar School for Girls, for the governors. Mr. A. L. Guy, A.R.I.B.A., 78, High-street, Lewisham, architect and surveyor:—

Staines and Son	£560 0 0
Kennard, D. and R.	547 0 0
Jerrard, S. J. (accepted)	520 0 0

MARYLEBONE.—For rebuilding horse repository, High-street, Marylebone, W., for Mr. W. Burton. Mr. T. Durrans, A.R.I.B.A., 44, Upper Baker-street, N.W., architect:—

Stevenson	£8,200 0 0
Scrivener and Co.	7,825 0 0
Bovis and Co.	7,731 0 0
Higgs	7,549 0 0
Ward, Clarke, and Co.	7,478 0 0
Clifton, H. C., Bayswater* ...	7,333 0 0

* Accepted.

MOW COP, STAFFS.—For the erection of a group of school buildings for 320 children, with caretaker's house, at Mow Cop, for the Wolstanton School Board. Mr. A. R. Wood, Tunstall, architect. Quantities by architect:—

Boon, J., Mow Cop	£2,547 5 6
Machin, C. W., Bradley Green ...	2,331 0 0
Smith, C., Tunstall	2,262 0 0
Grant, W., Burslem	2,250 0 0
Yorke and Goodwin, Tunstall ...	2,190 0 0
Longden, J. J., Burslem	2,138 0 0
Cope, C., Tunstall (accepted) ...	2,084 0 0

NEWARK-ON-TRENT.—For executing drainage works on Beacon-hill, for the town council:—

Cosham (accepted).

NEWPORT.—For rebuilding premises, Commercial-road, Newport, Mon., for Mr. R. J. Seardes. Mr. A. Swash, M.S.A., architect:—

Wilkins, G.	£1,172 0 0
Lock, C.	1,158 0 0
Price, W.	1,140 0 0
Westacott, T.	1,135 0 0
Matthias, J.	997 10 0
Webb, T.	995 0 0
Moulton and Brownscombe ...	983 0 0
Morgan and Roberts	960 0 0
Richards, E.	930 0 0
Williams, R. (accepted)	863 0 0

All of Newport.

NEWPORT, MON.—For carrying out repairs to the master's house at Maindee Schools, for the school board:

West, Newport (accepted)	£58 7 0

NEWTON ABBOTT.—For carrying out alterations at the market, for the town council:—

Zealley (accepted)	£64 15 0

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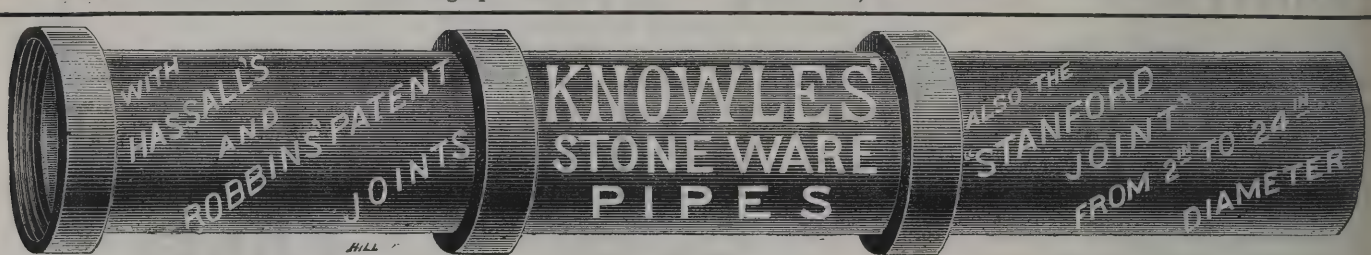
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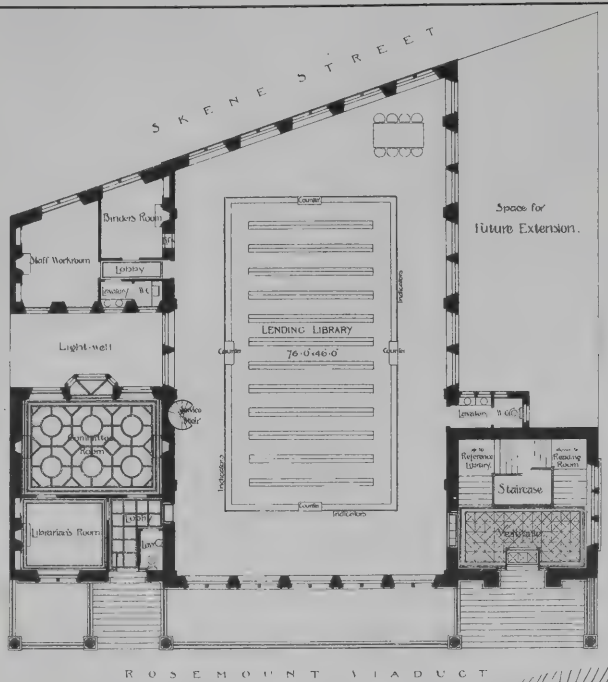
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Plan of Principal Floor.

ABERDEEN · PUBLIC · LIBRARY ·

ALEXANDER · BROWN · ARCHT ·

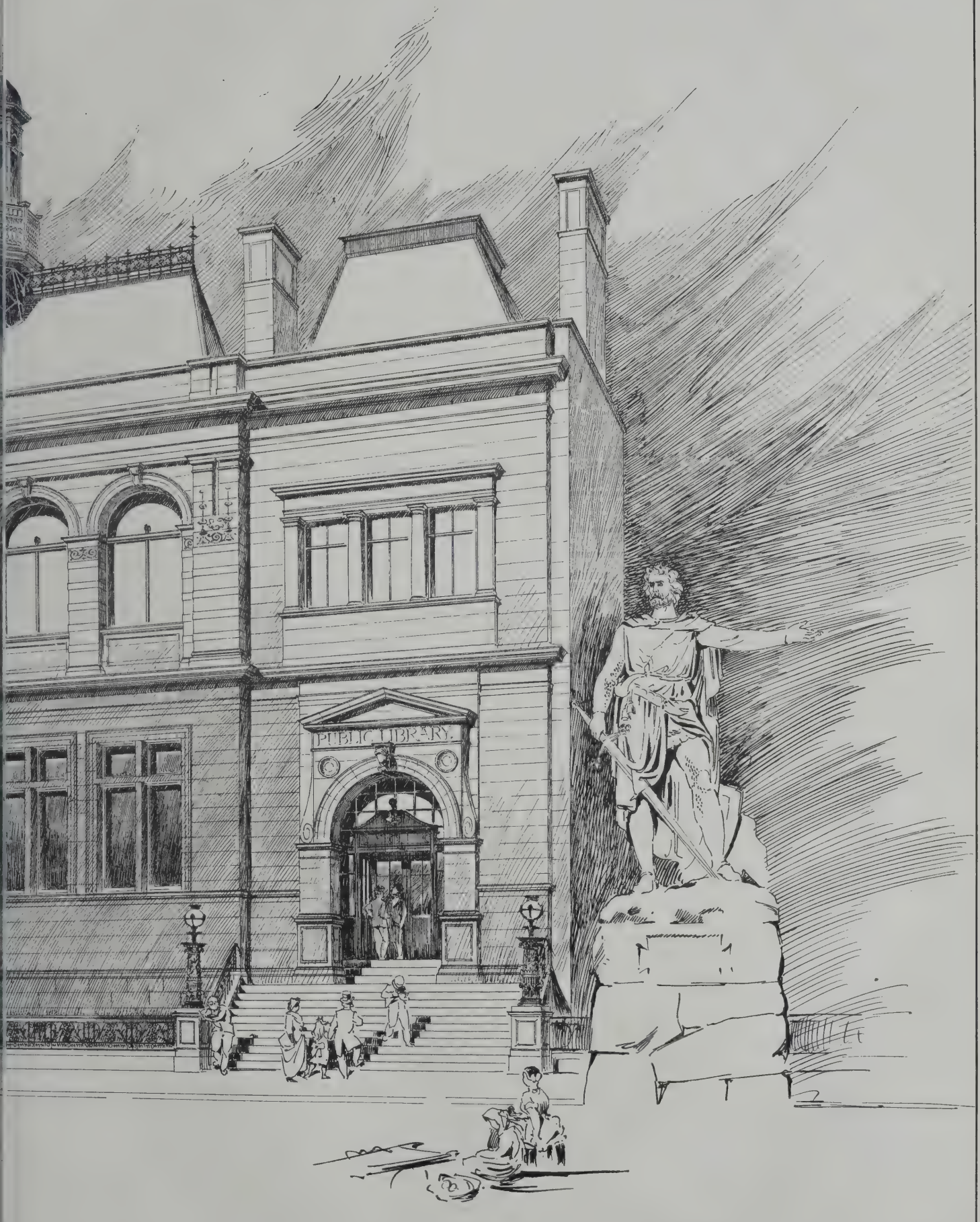


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The Brewery House, Battle.

Philip A. Tree, Architect.





"PHOTO-TINT," by James Akerman

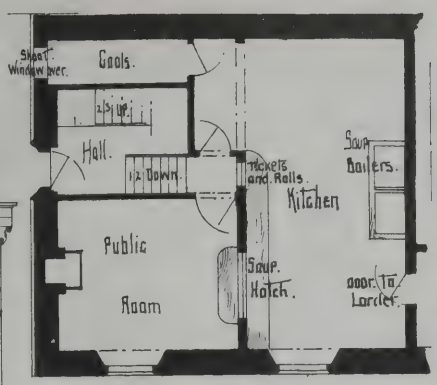
"PREMIER ARTISTE AGE DE LA PIERRE TAILLÉE"

"Building News" Designing Club.

A Parish Hall and Soup Kitchen.



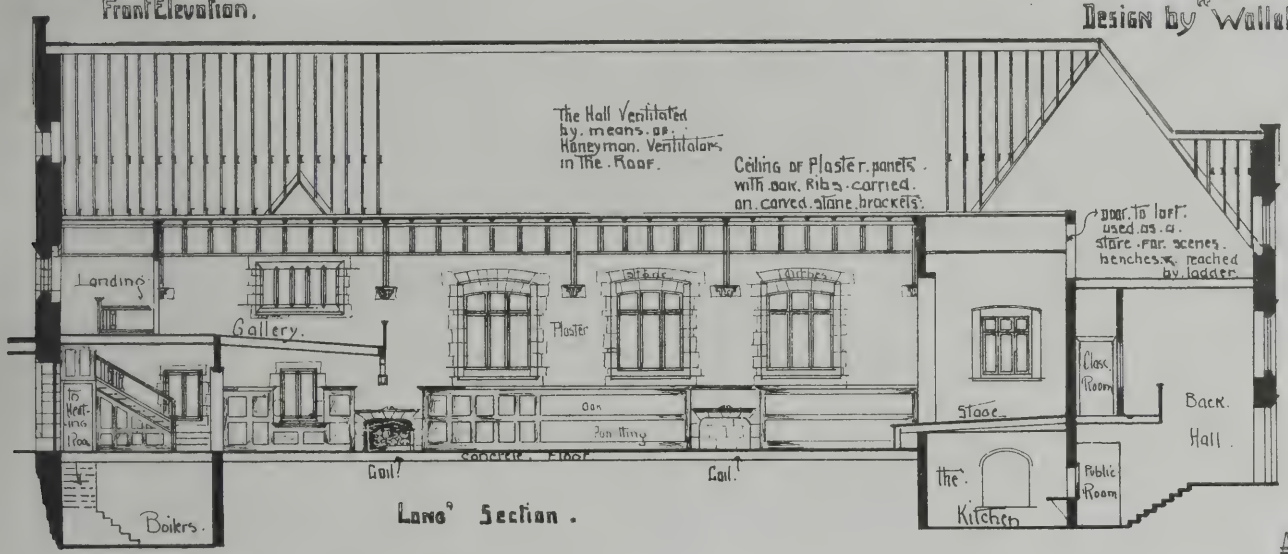
Front Elevation.



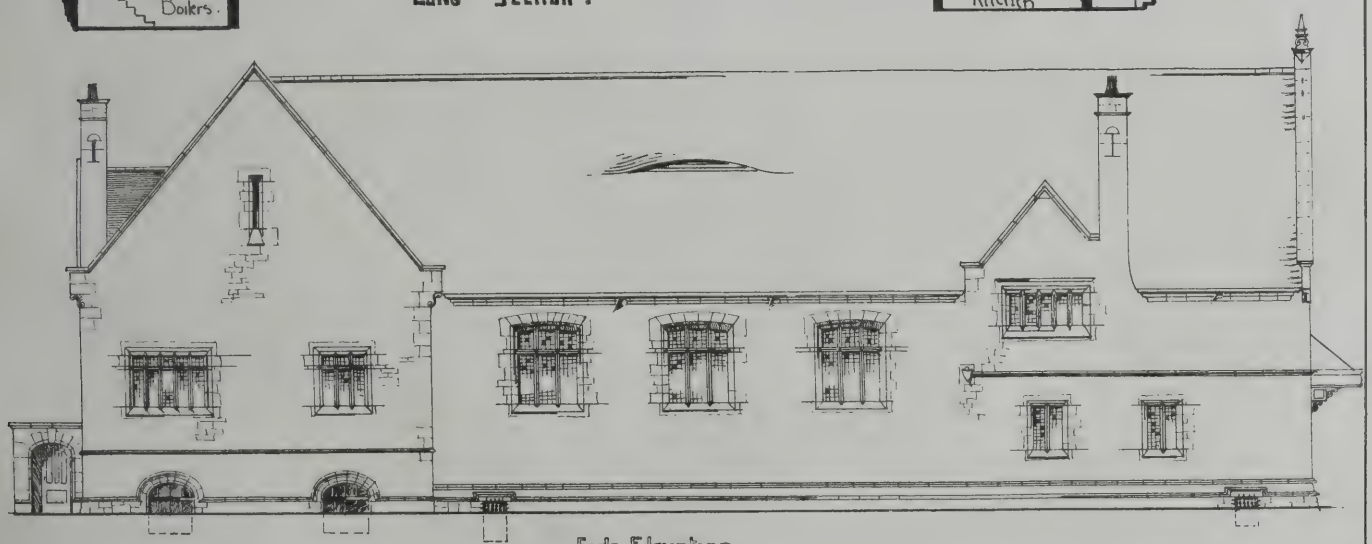
Plan of Kitchen.



Design by "Wallaby."



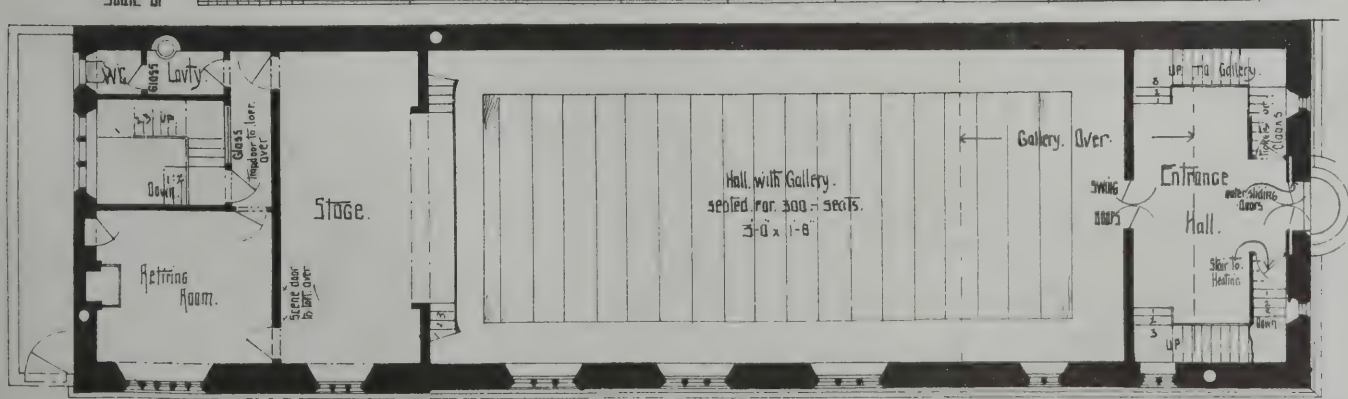
Long[o] Section.



Side Elevation.

May 1890

Scale of 10 5 0 10 20 30 40 50 60 70 80 90 Feet.



Plan of Hall &c.

DESIGN PLACED FIRST

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CAMPANILE
HOLY TRINITY CHURCH
GOSPORT
SIR A. W. BLOMFIELD A.R.A.
ARCHITECT.



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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LIX.—No. 1855.
FRIDAY, JULY 25, 1890.

ARCHITECTS' AND SURVEYORS' FEES.

THE frequent repetition of questions as to what is a reasonable charge to make for particular professional services is the best evidence of the variety and miscellaneous character of them. Though the architect's schedule of charges is pretty well known for building operations of an ordinary description, it is far otherwise with regard to a number of duties which fall to his lot. Architecture pure and simple forms, after all, only a portion, and sometimes a rather small one, of the practitioner's labour. While one client seeks the architect's skill in the design of a building, a dozen or more come to him for assistance in some business of a general kind which has no more to do with the art than book-keeping has to do with authorship. What connection, for example, there can possibly be between preparing designs for a building, and assessing the value of houses and dilapidations, we can hardly imagine; there is certainly very little between designing and measuring artificers' work, or doing the hundred-and-one things which more properly belong to the surveyor, valuer, or house-agent. Many people imagine that an architect should understand all these duties, and he certainly is expected to be able to give advice and to make valuations and reports upon a number of things which would be better done by the surveyor and the engineer. Increasing competition has forced the architect to combine the three professions in many cases, just as there are surveyors and estate agents who undertake to prepare designs for buildings. The intermixture of duties has added to the difficulty in the way of a general and uniform code of charges. If architects were to confine themselves to works of construction and formation, and surveyors to duties of measurement, valuation, and agency, a more just and defined class of services would be the result. As it is, however, all that pertains to buildings and property is now considered to be within the province of the architect.

With this wider range of duties it becomes necessary to agree to a scale of charges and commissions, and, as a first condition, to establish a reasonable basis of calculation. Buildings, as we have suggested before, ought to be divided into classes, depending on the cost, complexity of structure, the amount of artistic ability required, and the skilled labour necessary. The customary charges based on cost are agreed by all to be unsatisfactory. The traditional 5 per cent. is only a fair and equitable commission for buildings of ordinary kind costing over £1,000, and is totally inadequate for the designs of a decorative character, or for things, like a reredos, a pulpit, or stained glass. We do not propose now to enter into the question as it relates to works of this class, but to refer to those of a more general kind. The cost of a thing is not always a fair criterion of the skill required in its design. A surface may be studded with jewels, but the artistic ability spent on the design may be trifling; on the other hand, a great deal of original thought and study may be necessary in devising a scheme of earthwork, as in the laying out of a garden, the cost of which may be very small, and accomplished by the aid of unskilled labour. In neither case the expenditure would not be a reasonable basis to charge upon. The amount of time expended and skill actually bestowed on each design seem to be the only proper measure of the artist's labour; but this does not admit of easy calculation, except as a matter of time, which will differ according to the ability and aptitude of each artist, as one man may take double or treble the time of another in working out the same problem. Therefore it appears to be desirable to fix upon some arbitrary rate or percentage that will be found on an average of conditions to remunerate. To find such an average rate is no doubt difficult, and is one reason why there is such a diversity of opinion. One architect would think his services well-paid at 7 per cent.; another, very badly paid at 10 per cent. A committee of professional men could, in an hour or two, devise a rate for specialised designs that would satisfy the profession. Till this is done and established architects must be contented to charge for designs of an exceptionally artistic kind and intricacy, by the time engaged upon them. But the "time" basis, as we have pointed out above, does not give always the desired result. A specialist in stained glass would prepare a design for a window in much shorter time than a man who had little experience or taste for such work, and, according to "time" employed, would charge less than the latter. This would neither be just nor satisfactory to the true artist.

Extraordinary arrangements are made by some architects and their employers, which serve to show the unequal rating for professional service. The latest comes from a Warwickshire School Board. The Board paid £50 for the designs for new schools for 300 pupils, which were found to be inadequate in respect of ventilation and heating. Their own officer was requested to revise and amend the plans, and to supervise their execution, at a percentage of 5 per cent., and he was to give the Board twenty guineas towards the premium they had paid—a very curious arrangement, unless the plans were a repeat, and had been used for other schools. The practice of charging by "scales," such as the Institute schedule or Ryde's scale, is largely followed; but the employers, we are inclined to think, obtain rather different values or services for the same rate. The other day an action was brought by a firm of surveyors to recover a balance, the charge being based on Ryde's scale. The defendants said the charges were not fair and reasonable; but the plaintiffs by evidence contended that there was a custom, in the absence of any bargain, to charge according to the scale. Of course, the question was whether the defendants were aware of the scale. Mr. Justice Day said the evidence was not sufficient to establish a custom, but there was evidence that Ryde's scale was generally known and that the defendants who employed the surveyors were acquainted with the custom, therefore judgment was given for the plaintiffs for the amount. But a scale, although it may be generally known by the profession, may not be known to the employer, and therefore it has no binding effect in law unless they are made part of the agreement between the professional man and his client. When works are not carried out, the remuneration is often made by the day, an architect or surveyor charging what he pleases, according to his reputation; but the client is not unnaturally dissatisfied if he has not been a party to the arrangement. A reasonable remuneration only will be awarded by the Court, and will be a question for judge and jury. Very often we find a client, while admitting the rate per day, dissatisfied for the time charged for. This can only be settled by evidence to show that the time is reasonable for the work.

The fees charged by engineers have not been fixed by schedule. Probably the reason is, that a scale would not be satisfactory to all alike—those who are eminent and those who have little practice. How much more does this reason apply to the architectural profession, where the degree of eminence depends so much on artistic ability and position? A scale may be desirable for the rank and file of the profession; but for those who have large practices and can command higher fees, it should not, nor indeed can be, made binding. The charges for making plans of estates with a view to laying it out for building are, from the nature of the case, very various and uncertain. Correspondents are continually asking for some rule. A plan of a building estate may be a matter requiring very little skill, or it may demand a great amount of thought and experience. No fixed schedule is possible. The time and labour expended on it are the only means of estimating a fair charge. Some surveyors take the number of plots, others make their charge as a commission on the estimated expenditure of laying out, which latter appears to be a more reasonable basis. The percentage would not be too high if taken at 2½ per cent. on the cost of formation of roads, fencing, drainage, and other works in some cases; for supervising the buildings during their erection and certifying the lease an extra percentage of half per cent. to 1 per cent. would be necessary. On very extensive estates a less percentage on cost would be fair. For a certain class of work there is no rule or rate, and the surveyor or engineer has to adopt a scale of his own, or charge by time and labour. For example, it may be for planning and constructing a road, preparing levels, sections, plans, and quantities necessary for carrying it out. In such a case the fee ought to depend on the actual labour, and the cost of executing the work might be taken, upon which to charge the percentage, which would depend on the length of the road. For a work requiring a number of levels to be taken, embankments, cuttings, and draining, the percentage should be higher than for a road made through level land, which requires merely a plan and section. The formation of a lake or any earthwork should be remunerated for in the same manner—namely, the skill and labour required in designing the work. It would be desirable to fix a scale of charges for works of this miscellaneous character. The time actually occupied by an experienced engineer in conducting a given work would be the fairest mode of ascertaining an equitable charge. Having arrived at a fair remuneration by this means, it would be easy to find out what a percentage this sum would be on the actual cost, and for similar undertakings a like commission could be charged. Approximate scales for other works could be formed in this manner, and a scale after all is more satisfactory to the employer, who likes to know beforehand what the fees are. Professional charges made by time or per day for works of this description are uncertain, and cannot be estimated till the work is completed.

BERMONDSEY FREE LIBRARY COMPETITION.

NO less than 53 designs have been sent in for the erection of a public library for the parish of Bermondsey, and are on view in the Town Hall. The design submitted by Mr. John Johnson, of Queen Victoria-street, has been selected. The first premium has been awarded to Mr. W. L. Bernard, of Bristol; the second to Mr. H. T. Hare, of Lombard-street, E.C.; and the third premium to Mr. J. B. Broadbent, of Manchester. We are compelled to confine our remarks to the three first designs. The selected design bears the motto "Light," which essential has been fairly considered. The site next the Town Hall necessitated a skilful distribution of the main departments, as the ancient lights on the western side had to be respected, though the author has

brought his building close up to the boundary. Mr. Johnson has placed his newsroom and magazine-room on the right hand side of entrance, separated from each other by a glazed screen. The former fronts Spa-road, and is 32ft. 6in. by 22ft., the latter of the same dimensions. The librarian's office is on the left side. An entrance of 15ft. in width leads into a spacious hall 37ft. by 15ft., having the main stairs on the left side. Arranged axially with the hall is the lending-library, square on plan, in the rear, 41ft. 6in. by 40ft., with counter for borrowers the whole width of hall, projecting into the library. Windows are placed on all three walls, and the book-cases are arranged transversely from the piers, and longitudinally down the centre of room rows of piers on either side divide the area into a centre and aisles. A librarian's entrance is on the east side. The first floor plan shows the reference-library, 41ft. by 40ft., over the lending-library behind, divided by bays with four corner piers, which carry the domical ceiling, which has a ventilating cupola in the centre. Over the news and magazine rooms on the side is a book-store, 45ft. 6in. by 24ft.; a ladies' reading room, 22ft. by 16ft., is over the entrance, and a librarian's drawing-room over his office. On the second floor are the librarian's private apartments; in front and on the basement are additional book-stores, a book-binder's room, and heating apparatus. Light is partially obtained on the ground floor by screens round the hall. A skylight along the Town Hall side lights the news-room on the ground floor. The reference library is a domical apartment lighted chiefly from the top, and the yard and area on the left side afford light to the lower department. The elevation towards Spa-road is three-storied, Renaissance in character, and of red brick and stone or terracotta, with a high roof, end pavilions, and a lofty centre carried up as a flèche.

The first premiated design by Mr. Bernard, with motto triangle in circle, is a more elaborate design in the same style, shown by a pen-and-ink perspective, with a recessed centre and arcade, and another forming a private entrance on the west side. A centre public entrance, with inner hall 18ft. square, has the staircase, and beyond it a square inclosure for borrowers, with issue and return desks, taken out of the lending-library behind, which is 51ft. 9in. by 31ft. 6in., and has a raised floor to allow of efficient supervision of the news and magazine-rooms; it is divided into three unequal parts by two rows of columns, the shelves or cases being arranged transversely, those in the aisles being lighted by the side windows. Shelf accommodation is provided for 22,000 vols., in cases 6ft. 6in. high, within easy reach. The room has plenty of light from the end and sides. The news-room is 27ft. 3in. by 38ft. 4in., and has 56 stands for reading on the left side of hall; the magazine-room on the other side, 27ft. 6in. by 22ft., lighted on two sides. The first floor has the reference library above the lending library 48ft. by 31ft. 6in., with six side-bays of shelves on each side, and holds 8,000 vols. The book-store is over the newsroom; a ladies' reading-room over the magazine-room with a private lobby, lavatory, &c., well lighted by side lanterns. The reference-library has an arched ceiling over the centre portion, and is lighted by side lights through it as well as at the side. A section shows openings into a ventilating trunk, which leads to a cupola as an exhaust. The librarian's private rooms are ranged along the front on the next floor. A book-store and binding department are in the basement. The cost is put at from £5,500 to £6,000.

The second premiated design, with Renaissance features, red brick and stone ("Q" in a circle) has a compactly-grouped plan. Round a centre hall are grouped the lending-library, 50ft. by 30ft., in rear; news-rooms, 37ft. by 21ft. 6in., on west side; a magazine-room, 25ft. by 22ft. 6in.; and a ladies' room, 24ft. by 14ft., on either side of entrance. The librarian can command the departments, being placed between the lending-library and magazine-room on the left side. The first-floor plan places the reference-library, 50ft. by 30ft., over the lending department, the book-store over news and ladies' rooms, with those of the librarian on the other side. A gallery surrounds the reference-library, and the lighting and ventilation have been considered. The author provides for 30,000 volumes in lending-library, and for 68 readers and space for 8,640 volumes on floor, and 9,850 in gallery in the reference-library, the space being calculated at 8 vols. to a square foot. It is top-lighted, has a staff stairs, and open-timbered roof. Heating by the small-bore hot-water system with coils is provided. The cost is estimated at £4,660.

"Spa," by Mr. Cole A. Adams, has a well-studied arrangement, but the entrance is contracted. A large lending-library, 47ft. by 32ft., occupies the centre, lighted partly through a well in the reference library above, and also by a skylight at the side. The news and magazine rooms are on the right-hand side of hall, each about 26ft. square, the ladies' room on left of entrance; a borrower's lobby, 24ft. by 10ft., is top-lighted. A book-store in the rear is provided. The reference-library, 55ft. 9in. by 31ft. 9in., is on the first floor, in centre librarian's office, and parlour in front, and a book-store behind. Skylights at side and rear admit the light to the lower rooms, which are built to the full limits of land at the side. The elevation is somewhat too villa-like.

"Book Worm" is like many in general arrangement, the magazine and news-rooms in front with book-store above. The details are unsatisfactorily worked out. A bold design is sent in for the front. Among the clever plans we may notice "Librarian," in which the lending department, 45ft. by 35ft., is transversely placed at the back with a good area for light in rear; the hall with counter is in the centre at the side. The librarian's office, the news, and magazine-rooms are in front. The author is Mr. Edwd. W. Mountford. The elevation, an elaborately detailed design of Renaissance, accompanies it. "Red Crosse" has also a good plan, with large centre hall and a straight counter across end of hall for borrowers, 29ft. 6in., the whole width of lending-library in the rear. The Bermondsey coat of arms is the motto of another well-devised arrangement, having a good public space at the end of lending-library. "Onward" is a clever design in a Queen Anne style, with a well-drawn elevation. The entrance is rather contracted. "Vi et Arte" is artistic, of Late French Gothic features; the entrance hall is small, and lighting is not good. "Streona" is worth notice: the departments are well placed within the boundaries, enabling light to be obtained to all of them. The style is of Late Gothic character. "Minerva" has a good hall and public space, with particularly glaring red elevations. "Read on this Book" shows also a well-devised space for borrowers taken out of lending-library, which is on right of entrance instead of in the rear. "Lacon" is compact; "Tor" has a clever sketch, in sepia, of 17th-century features well handled, with a good hall and space for borrowers, and the lighting is efficient, which is more than can be said for many. "Lux" and "Simplex" are also cleverly thought out; "Economy" has a symmetrical plan, with central hall and effective features. "Kent" has a well-arranged public department; the hall is large, and the rooms well grouped; "Liber" also has a good hall and lobby arrangement, and is well lighted. "Τάνταλος" is a well-drawn set of plans; but the plan is rather awkward, and glazed screens are largely used. "Inter Alia" has the lending-library in front with book-store over reference-library and news-room. "Ad Rem" has one lending-library at side of hall, ladies and librarian's rooms on left side.

Designs of more or less merit are those of "Sapientia Fons Vitæ," "Pascal," "An Idea," "Porte Bonheur," "Utility," "Ad Unguem," "Light and Air," "Good Plans instead of Showy Perspectives."

THE MANCHESTER BUILDING BY-LAWS.

THE long-looked-for code of builders' by-laws for Manchester was confirmed by the Local Government Board and came into operation in May last. Previously the building regulations for Manchester were a patchwork of many local acts. The Manchester Improvement Acts of 1865 and 1869 and a provisional order gave powers to the corporation to make by-laws, and the code now in force, and of which code we have a copy before us, may be said to be fairly perfect. The Model By-laws relating to new streets and buildings have been in the main followed. Thus, with respect to the construction of new streets, the least width is that given by the latter case—namely, 36ft.; certainly somewhat narrow, and the provision further states that such street shall have at one end "an entrance of a width equal to the width of such street, and open from the ground upwards. A new back street is to be at least 9ft. in width uninterrupted for its entire length." Adverting now, with brevity, to the main provisions in the clauses affecting new buildings, we find the model regulations generally followed. Half-timber walls are provided for, and the clause runs word for word according to the prescribed form as follows:—"Provided always, firstly, that where a new building intended for use as a dwelling-house shall be distant not less than 15ft. from any adjoining building not being in the same curtilage, the person erecting such new building may construct its external walls of timber-framing in accordance with the following regulations." Then the instructions follow as in the model code requiring the spaces between the timbers to be filled in with brickwork *or other non-combustible materials* with a thickness of at least half a brick at the back of every timber, &c. The italics are new, and allow for the use of concrete, rough-cast, or other material as a filling—certainly an important addition. Then follow the clauses providing for the materials for cross walls, which appear to have nothing new. Coming to cavity walls the new code provides for double walls to the stories of dwelling-houses below the level of the ground, the intervening cavity to be 2in. extending from the base of walls to the surface of ground. The original rule made the cavity 2½in., and continued this hollow to a height of 6in. above the exterior surface of ground, a very necessary precaution. The walls are to be tied by galvanised iron ties placed not exceeding 3ft. horizontally and 18in. vertically, a damp-course of 4lb. sheet lead, asphalte ½in. thick, or slates laid in cement being inserted as a damp-course.

The clauses referring to the heights of stories and the thickness of external and party-walls are apparently the same as those prescribed by the Local Government Board. Thus we find the same definition of the height of stories. It is unfortunate that the framers of the Manchester By-laws should not have set the example of amending these definitions and measurements of heights, and especially have defined more clearly what the "topmost story" is upon which all the after rules as to thickness depend. The schedule of thick-

nesses for walls of domestic buildings has not been altered; but the awkward phrase "thirteen and a half inches" thick has been substituted by the more practically understood thickness of a brick-and-a-half wall—namely, "fourteen inches" throughout the schedule. Instead also of "twenty-six inches," "twenty-seven" inches has been substituted, also "twenty-two-and-a-half inches" for "twenty-two inches." For warehouse walls the rules follow the Model By-laws. New public buildings or warehouses are to have the party-walls carried up 9in. at the least in thickness above the roof flat or gutter of the highest adjoining building, to a height that will give 3ft. measured at right angles to the slope of roof, or above the highest part of flat or gutter. Where the woodwork of the roof projects beyond the face of such buildings, the party-walls are to be corbelled out to the full extent or projection, and be carried up 9in. at least in thickness to such a height as will give a distance of 3ft. at right angles to the slope of roof. Party-walls of domestic buildings to be carried up at least as high as the under side of the slates, the same to be solidly bedded in mortar or cement on the top of wall. The parapets to external walls of public buildings, warehouses, or domestic buildings used partly as shops, which are over 30ft. in height, and within 15ft. from any other building, to be carried up so as to form a parapet 1ft. at least above the highest part of roof or gutter.

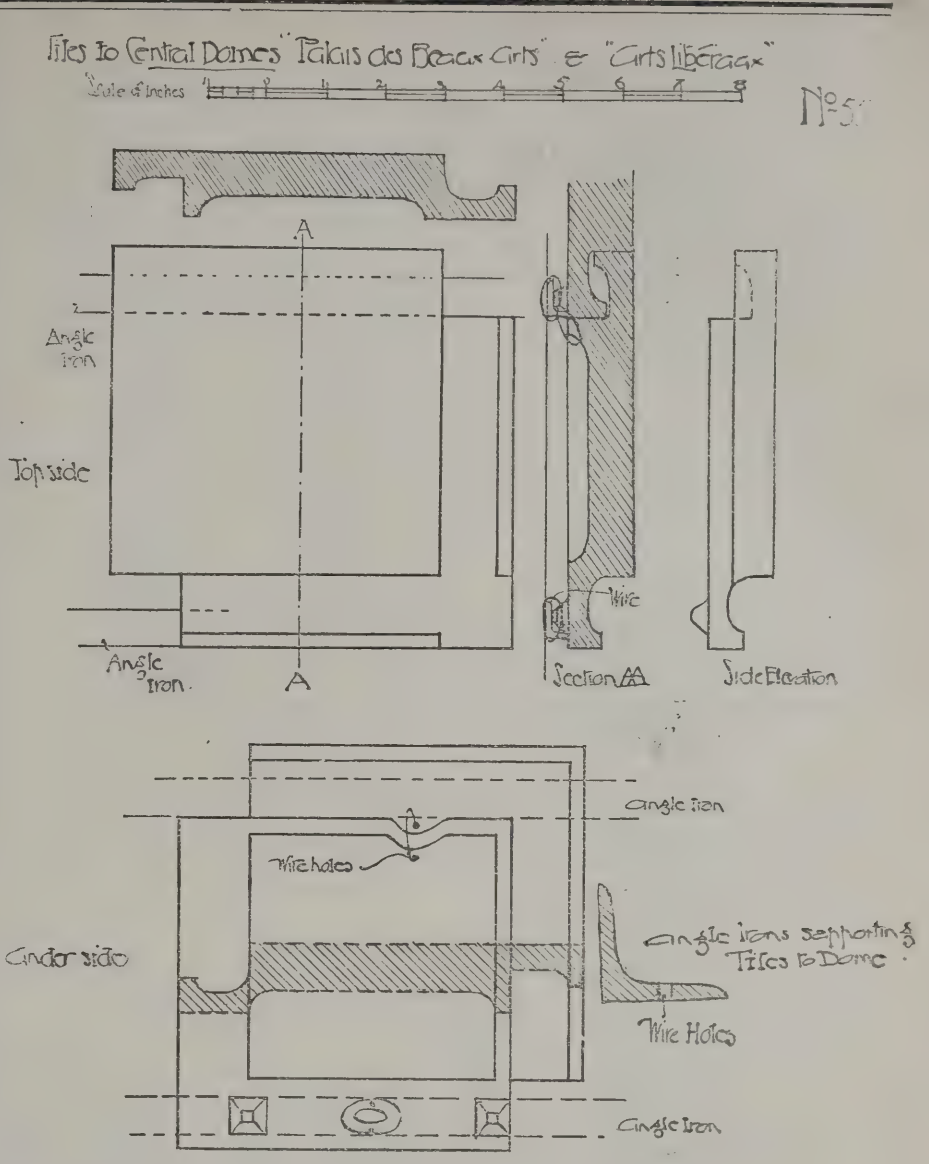
Floor and ceiling joists of domestic buildings are regulated according to a scale of scantlings. With respect to the space about buildings to secure circulation of air, the new by-laws provide in front of dwelling-houses 36ft. at the least to the opposite boundary or side of street, instead of the prescribed 24ft. of the original code, except in cases where the street is of less width than 36ft., when 24ft. is to be deemed sufficient. The space in the rear is regulated by the old rule, which prescribes a distance of 15ft. at the least for dwellings 15ft. high, of 20ft. for houses 25ft. high, and 25ft. at least for houses of 35ft. or above that in height. These are certainly small allowances of area.

As regards drainage, the provisions are more satisfactory. The lowest stories of new buildings are to be at such a level as will allow of a drain sufficient for the requirements, to empty into a sewer "at a point in the upper half-diameter of such sewer." Drains under buildings to be laid in the ground with at least 12in. between the top of drain at its highest point and the surface of ground, such drains to be laid in straight lines, and to be completely bedded in concrete 6in. thick all round. The drain to be ventilated at each end, inlets to be trapped, a suitable trap to be introduced in that communicating with any sewer, at a point as far as possible from such building. Amongst other provisions we find that two (at least) untrapped openings to the drains are to be introduced, according to one or two arrangements which are described in the Model By-laws. These are the main provisions of the new code, to which we refer our readers.

CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—VIII.

By BANISTER FLETCHER, JUN., A.R.I.B.A.

THE domes to the "Palais des Beaux Arts" and of the "Arts Libéraux" are similar and symmetrically placed. They differ on plan to this extent, that the "Beaux-Arts" dome has a wide gallery at the first-floor level, which is approached by staircases at the four corners leading from under the dome. The domes rest on four great standards of lattice-work framing, from which spring the Tudor arches in lattice work supporting the dome itself. The tops of the standards are connected with semicircular iron lattice arches at the back. The staircases and



gallery to the "Beaux-Arts" dome are most satisfactory in their outline and general proportions, the arches in stonework supporting them, following the rake of the staircase, and the central arch being formed of a low elliptical arch. The iron balustrading is extremely rich in design. The dome itself is framed by means of 12 girders, with a curve struck from six centres in such a way that the intrados of each is proximately elliptical. The girders are connected at their top by a circular girder 30ft. in diameter, above which is the glass lighting the dome. At the base of the drum of the dome the 12 girders are connected and held in position by a circular belt of framing, which also carries the attic wall and the ornamental vases in glazed faïence. Between this upper and lower set of circular girders, four rings of circular purlins are introduced, which take the intermediate rafters, &c., and enamelled tiling of the roof covering. The dome itself is 196ft. 10in. high from the ground, and 98ft. 4in. above the top of the gallery roof.

The diameter of the domes between the standards supporting them is 32 mètres, or 105ft., and they are covered at their lower portions up to the glass with glazed tiles of a special design, because there is no overlapping, the tiles presenting a level face. I give some drawings of these (No. 55 and 56) made from the models of the tiles themselves in M. Formigé's office. These are made by M. Müller, who also made the terra-cotta to the buildings. Several specimens were tried in the endeavour to get these tiles watertight, and even now M. Formigé told me they are not watertight. The domes are covered with zinc, underneath the tiles, in order to further protect the inside.

The dome is also lighted by the circular windows at its base, formed with voussoirs in blue and white glazed terracotta. The tiles externally are very happy in effect, the dome being divided vertically into 12 divisions, thus emphasising every alternate girder by tiled divisions in gold. The wide divisions between these have a white ground with R.F. in the centre in gold on a turquoise blue ground.

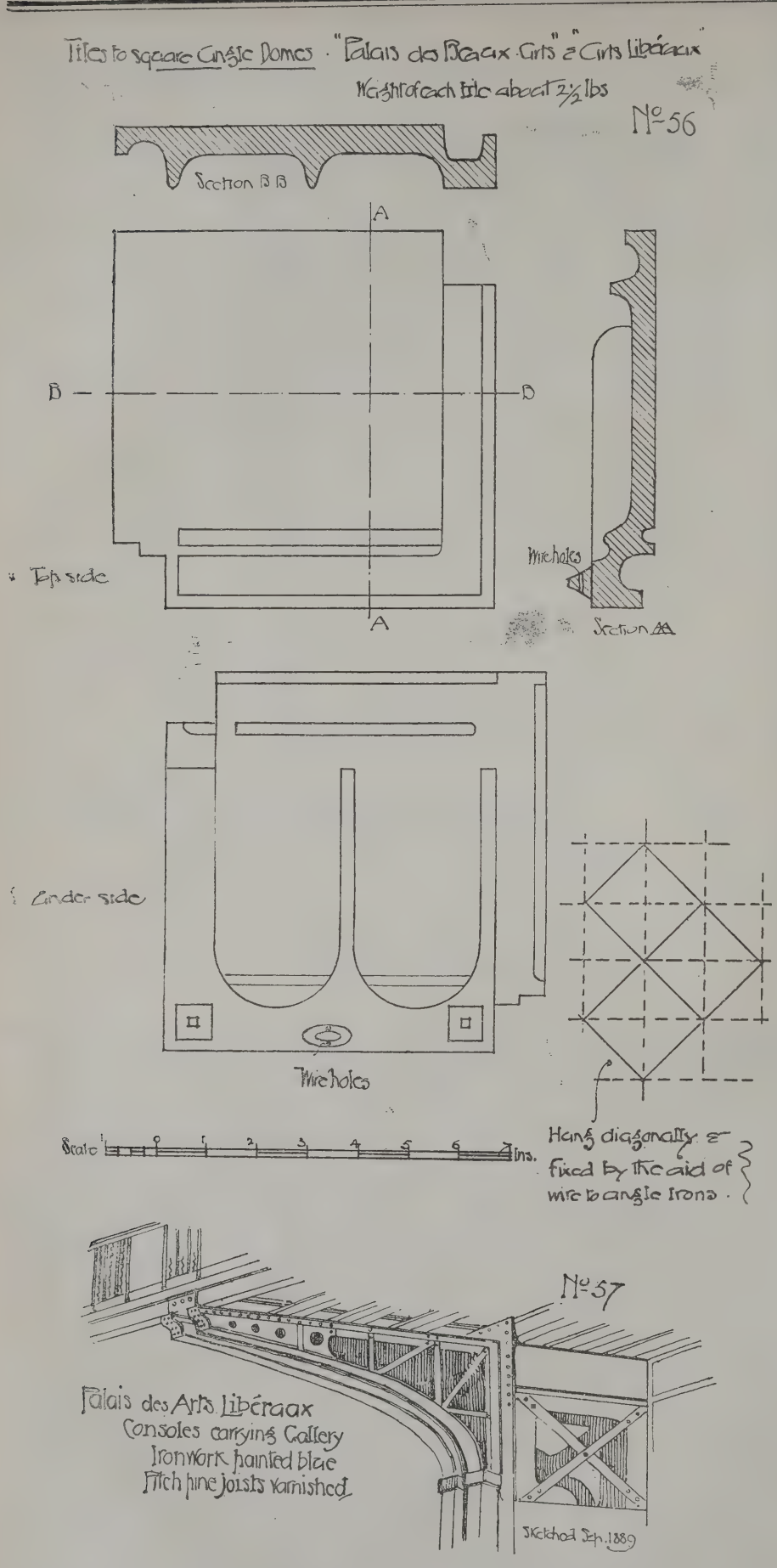
There are 24 large vases in glazed terracotta at the base of the dome, one at the bottom of each girder. These vases are 10ft. high.

The strains allowed by M. Contamin were 57·1lb. per square foot to the glazed portion of the dome, and 94lb. per square foot in the tiled portion, exclusive of the horizontal action of the wind, which is taken at 80·6lb. per square foot.

The two sheets of drawings (55 and 56) are details half full-size of tiles to the main circular domes and the square angle domes; they rest on angle irons, and are secured to these by wire passing through specially prepared holes.

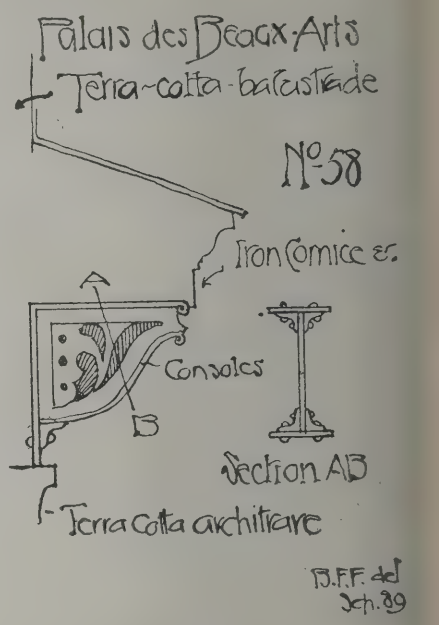
The side aisles are in two heights, and at the level of the first floor in the Liberal Arts Gallery, there is a gallery, No. 57, supported on iron cantilevers projecting 16ft. 5in. into the nave. This gallery is connected at different points with the first floor of the "Histoire du Travail." (There is no gallery to Fine Arts Palace). Details are given of this projecting gallery in the plate of details of the truss, and the above sketch will give an idea of the general arrangement; it is riveted to the back of the main trusses. Iron joists of sheet and angle irons rest on the top of these cantilevers, and these in turn support the wooden joists which carry the floor. The ironwork is painted grey-blue, and the joists are pitch-pine, varnished, which give the gallery an appearance of extreme lightness and grace from below.

The total height of the side aisles is 65ft.; they are covered with a pitched roof having a tie-rod. The principals of this roof are about 30ft. apart, or half the distance between the great principals of the nave. They rest on a bracket riveted to the back of the main principals of the nave and



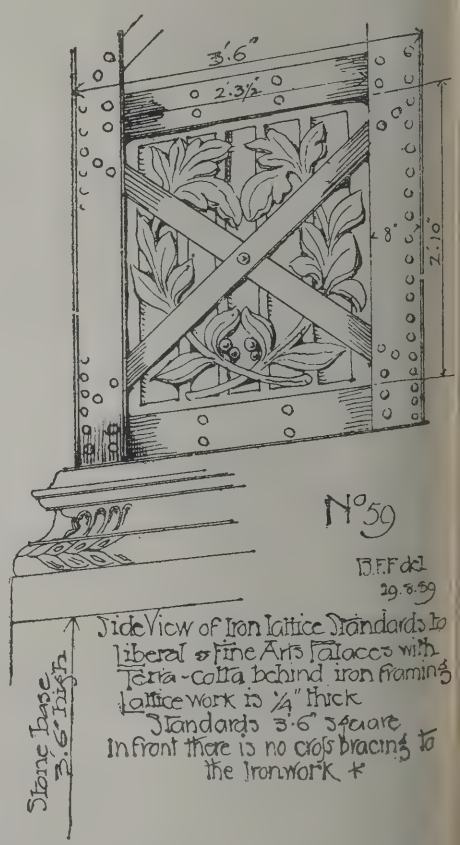
intermediately on lattice columns 1ft. 11in. by 2ft. 7in., which rise as high as the gutter itself.

Externally.—The roof principals to the side aisles rest on the outside on iron lattice-work standards filled in with light Venetian red terra-cotta. These standards, as far as the ironwork is concerned, are painted grey-blue, which goes very well with the terracotta (No. 59 and 60). They are connected longitudinally at the first-floor level by a lattice-work girder (No. 61), and again under the main cornice by trellis-work arches, which take off the sharp junction of the angles. These arches (No. 61) are double, one behind the other; they are, however, somewhat spoiled by the fillings in to the spandrels of these arches, which are in rather coarse naturalesque foliage. The glass to the windows comes behind the back arch, which gives a deep shadow. On each side of these standards, at about 2ft. distance, are cast-iron ornamental circular columns (No. 61) resting on a stone base, which carry the light lattice girders connecting the standards, which girders in their turn carry the cross girders supporting the floor, which are supported at the other end by the brick wall separating the



main nave from the aisles. These girders are also supported in the middle by standards, the secondary girders supporting the floor, consisting of three iron girders, carrying the brick arches, which are finished in white plaster underneath.

The *Façades* to "Palais des Beaux-Arts," and the "Arts Libéraux," are probably one of the most satisfactory parts of the Exhibition from an architectural point of view. The colour of the terracotta is a bright Venetian red, and the combination of this colour with grey-blue of the



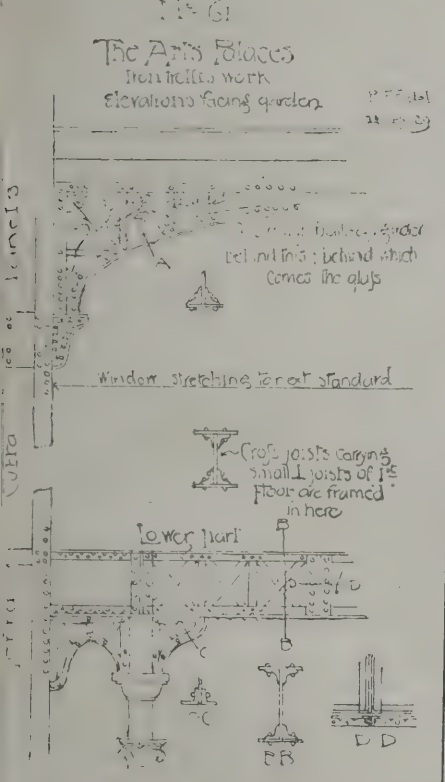
ironwork is thoroughly harmonious. The standards to the façade are 3ft. 7in. square (No. 59) and rest on a stone base, and are about 25ft. apart, and have on each of them the circular cast-iron columns described above; helping to carry the connecting lattice-work girder. Between the standards and resting on the lattice-work

girders to first floor is a close terracotta balustrading (No. 62); above this, for the whole distance between the piers, are the large windows lighting the first-floor galleries, until the segmental trellis arches are reached connecting the standards: these are riveted to the sides of the standards, resting on small iron corbels, and carry the architrave, frieze, and



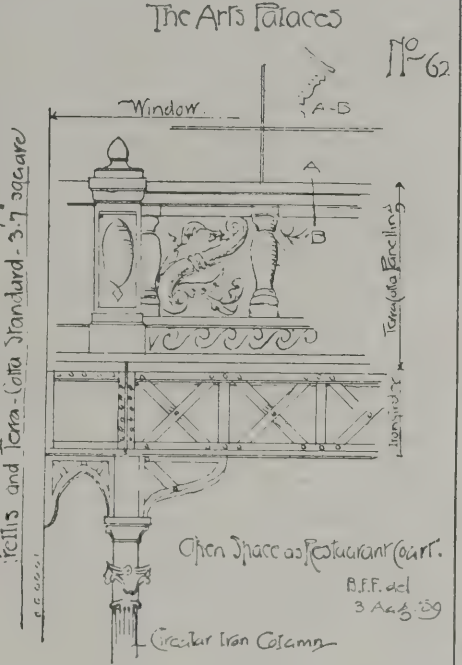
cornice in terracotta, and, above this, terracotta balustrading. The iron cornice (No. 58) painted blue, breaks round the piers, and is somewhat original, having consoles formed of sheet and angle irons, the sheet-iron being perforated. The piers themselves are continued up through the cornice, and finished with a flag-hole. Immediately under the cornice the standards have glazed faïence with shield.

The main central entrances to both the palaces are built in terracotta, with no ironwork, in deep



narrow courses, and the spandrels to the semicircular arches composing the entrances are filled in with terracotta panels in relief. The two small quadrangular domes which occur at each end of the palace nearest to the Seine are also covered with glazed tiles, the details of which are given further back; the key-note is blue and yellow on a white ground. The main central entrances are flanked with a square projection, which is taken up above the roof, and covered with an open arched cupola. In a band above the semicircular arches, and over the keystone of each arch, is a figure in terracotta, which are connected by deep swags with the adjoining figures; above this group is a corbelled cornice. These entrance vestibules are roofed with glass back to the central nave, from which spring glass-fronted gable carried back to the circular drum of the dome. The spandrels to the dome is covered by a sloping roof. On each of the central feature to the façades there are eight bays between the lattice-work standards, and these are bounded at the Seine end by the square domes mentioned above, and at the other end by the galleries Rapp or Desaix.

The Fine Arts Palace differs in only a few respects from the Liberal Arts Palace. There is no projecting balcony to the nave at the first-floor level, and there is a staircase in each angle



under the Beaux-Arts dome. This staircase has been described under the dome, also the difference consisting in the gallery to the first floor in the dome.

The entrance from the central garden is similar to the "Arts-Libérateux," except that the piers carrying the arches are ornamented with motifs in glazed faïence instead of the two statues representing Commerce and Industry, which appear in the entrance to the "Palais des Arts Libéraux."

PRACTICAL ARCHITECTURE WITH DETAILED ESTIMATES.—LXVII.

By HENRY LOVEGROVE, F.S.I., Surveyor.

ESTIMATE FOR A VILLAGE ELEMENTARY SCHOOL.—BILL.

EXCAVATOR.

Yd.	ft.	in.			£ s. d.
166	0	0	Cube.	Dig and cart from surface	
99	0	0	,,	Do. do. from trenches	
236	0	0	,,	Do. do. do., part return, fill and ram	
	17	0	Run.	Planking and strutting to trenches 2ft. 11in. wide and 5ft. 3in. deep	
334	0		,,	Do. do. 3ft. 4in. wide and do.	
66	0		,,	Do. do. 4ft. do. and do.	
11	0		,,	Do. do. 5ft. 7in. do. and do.	
				Allow for any baling and pumping that may be required to keep excavations clear of water	
348	0	0	Sup.	Hard brick core 12in. thick and well ramming	
99	0	0	Cube.	Concrete as described in Foundations	
374	0	0	Sup.	Do. 6in. thick properly spread and levelled	
11	0	0	,,	Do. average 6in. thick filled in over trimmer arches	

DRAINAGE INSPECTION CHAMBERS, &C.

3	0	0	Cube.	Dig and cart	
6	0	0	,,	Do. do. part fill and ram	
3	0	0	,,	Concrete as before	
2	0	0	Sup.	Extra for dishing do. to bottom of chamber	
	46	0	,,	Reduced brickwork in cement, including rough cutting	
6	0	0	,,	Rendering with cement	
2	0	0	,,	Do. dished to bottom	
	38	0	Run.	6in. by 4in. York stone tooled and rebated, curbed bedded and jointed in cement	
				No. 1. 2in. do. tooled cover to manhole with tooled edges 2ft. 9in. by 2ft. 3in.	
				No. 1. Do. 3ft. 6in. by 3ft.	

Yd.	ft.	in.			£ s. d.
				No. 4. Wrought-iron rings 2½in. diameter, and letting into York stone and running with lead	
158	0		Run.	4in. Doulton's glazed stoneware pipe jointed in cement, and digging average 2ft. 6in. deep, and filling in	
80	0		,,	6in. do., all as last	
54	0		,,	9in. do. do.	
20	0		,,	Do. and do. deep digging or tunnelling to connect with sewer (provisional)	
5	0		,,	4in. cast-iron ventilating pipe with joints caulked with red lead and tow	
				No. 1. Galvanised wire inlet with mica flap, and fixing to iron flap	
				No. 13. Extra to bends in 4in. pipe	
				No. 7. Do. do. junctions in do.	
				No. 1. End of 4in. pipe made good to drain	
				No. 1. Connecting 9in. pipe drain to public sewer	
				No. 3. Ends of 4in. pipe built through 9in. walls and made good thereto	
				No. 2. Do. 6in. do. do.	
				No. 2. Do. 9in. do. do.	
				No. 2. Drain interceptor traps and fixing	
				No. 4. Doulton's 8in. glazed stoneware yard gullies with iron gratings and 4in. outlets and bedding in concrete	
				No. 1. Approved 9in. sewer gas interceptor with clearing arm, &c., and bed of concrete	
				No. 1. 6in. white glazed stoneware circular channel about 3ft. girt, and setting in concrete	
				No. 1. Do. about 5in. girt and do.	
				No. 1. 9in. do. channel 3ft. long with branch and setting in cement	
				Allow for paying all fees legally demanded by local authorities	
				Test drains and leave all perfect	

BRICKLAYER.

Rods	ft.	in.			£ s. d.
50	226	0	Sup.	Reduced brickwork in mortar, including all rough cutting	
1	93	0	,,	Extra only on do. for being built in cement	
	194	0	,,	Half-brick wall in cement	
	35	0	,,	Do. trimmer arch in do.	
	53	0	,,	Extra to segmental arch in stocks	
	30	0	,,	Do. do. in two half-brick rings in cement	
	126	0	,,	Do. to neatly axed do. do. do.	
	593	0	,,	Damp-course of asphalte ½in. thick, or two courses of slates bedded in cement	
		47	0	,,	Rake out cement joints and point with mortar
529	0	0	,,	Extra to fair face and twice distemper brickwork	
122	0	0	,,	6in. square red tiles bedded and jointed in cement, including cutting	
	56	0	Run.	Labour fair cutting in stocks	
	165	0	,,	Extra to rough relieving arch in two half-brick rings in cement, 4½in. soffit and all cutting	
	5	0	,,	Do. 9in. do. do.	
	5	0	,,	Do. 14in. do. do.	
	28	0	,,	Extra to bull-nosed angle in stocks	
	11	0	,,	Do. to brick rounded coping in cement to 9in. wall	
	148	0	,,	Rake wedge and point lead flashings in cement	
	69	0	,,	Do. do. step do. do.	
				No. 8. Ends of timbers cut and pinned	
				No. 2. Forming semicircular apertures through 14in. stone, 9in. diameter, and turning brick arch over same	
				No. 90. Frames bedded in lime and hair, the reveals screeded and pointed to match facings	
				No. 32. Small do. do.	
				No. 2. Large do. do.	
				No. 6. Frames do. and pointed on both sides	
				No. 14. Flues pargetted and cored	
				No. 14. Chimney backs rendered in cement	
				No. 14. Labour and materials, setting only grates	
				No. 12. Mortises in tile and concrete paving for iron dowels	

KENTISH RAG FACINGS.

Yd.	ft.	in.			£ s. d.
812	0	0	Sup.	Extra on brickwork to coursed random rubble facing, average 7in. thick, with proper bonders, the joints neatly pointed in cement	
19	0		,,	Do. to relieving arch and pointing	
19	0		Run.	Labour raking cutting	
92	0		,,	Do. circular do.	

Carried to summary .....

MASON.—SCOT'S GATE YORK STONE AND SETTING.

233	0		Sup.	2½in. tooled paving, bedded and jointed in mortar	
8	0		Run.	Labour circular cutting on do. to fit piers	
8	0		,,	Labour to circular sunk face to 7in. step to fit base of columns	
9	0		,,	12in. by 6in. rubbed and back-jointed step, including joints	
9	0		,,	17in. by 6in. do. do.	
45	0		,,	12in. by 7in. do. do.	
				No. 4. Fair ends to steps	
				No. 8. Fair jointed do. do.	
				No. 4. Sunk do. do.	
				No. 4. End of 17in. by 6in. do., housed to Bath stone	

Yd.	ft.	in.		£	s.	d.
			No. 16. Mortises for iron dowels			
			No. 6. 3in. tooled corbels 12in. by 9in. in cement			
			No. 5. do. templates 14in. by 12in.			
			No. 4. do. do. 22½in. by 12in.			
			No. 2. 6in. tooled bases 22in. by 22in., holed for four ¾in. bolts do.			

BOX GROUND BATH STONE

(including all labour, hoisting and setting in fine mortar, cramps and dowels, &c.)

261	0	Cube.	In plain bands			
9	0	,,	Do. do. ashlaring.			
312	0	,,	Do. quoins worked fair two sides			
84	0	,,	Do. do. do. three do			
11	0	,,	Do. rebated jambs			
58	0	,,	Do. chamfered capping set in cement, and sunk perforations for flues 14in. by 9in.			
24	0	,,	Do. pilaster, &c., worked circular on front, and fair three faces			
254	0	,,	Do. stopped, sunk, and weathered sill, with moulded stools			
94	0	,,	Do. moulded work			
49	0	,,	Do. do., set in cement			
140	0	,,	Do. do., circular			
5	0	,,	Do. do., boasted for carving			
501	0	,,	Do. moulded and rebated work			
61	0	,,	Do. do. double do. do.			
286	0	,,	Do. stop-moulded and rebated do.			
58	0	,,	Do. do. do. and double do.			
16	0	,,	Do. sunk, stop-moulded, and rebated window-head, with sunk joints			
24	0	,,	Do. sunk panel, boasted for carving			
16	0	,,	Do. do. and moulded do., the centre boasted for do.			
112	0	,,	Do. do. and moulded caps, bosted do.			
27	0	,,	Do. door-heads, worked fair, with circular moulded soffit and sunk joints, and rebated for door-frames			
24	0	,,	Do. circular column shafts, with sunk and moulded panels worked on same			
172	0	Run.	Labour to groove for iron tongue			
5	0	,,	6in. coping 2ft. wide, moulded, both edges set in cement			
74	0	,,	Do. raking			
			No. 146. Lead plugs and mortises in stone for fixing joiner's work			
			No. 2. Forming apertures through 14in. stone parapet walls 9in. diameter, and turn arch over same in stone for exit of rainwater			
			Carving in plain block letters 3in. high "Girls" on face of key-stone			
			Do. do. "Boys" do.			
			No. 4. Kneelers out of 1ft. 6in. by 2ft. by 1ft. 2in., sunk both sides, and moulded to form a part of coping, set in cement			
			No. 6. Do. out of 3ft. by 2ft. by 1ft. do., but with returned moulding at end			
			No. 4. Sunk and moulded bonders 2ft. by 2ft. by 1ft. 3in., set in cement			
			No. 2. Do. 2ft. 1in. by 2ft. by 1ft. 4in. do.			
			No. 2. Apex stones sunk both sides, and moulded to form a part of coping out of 3ft. 6in. by 2ft. by 1ft. 9in., set in cement			
			No. 2. Do. 3ft. by 2ft. by 1ft. 6in. do. do., boasted on face for carving			
			No. 1. Do. 3ft. 6in. by 2ft. by 1ft. 9in. do. do. do.			
			No. 4. Ball terminations out of 12in. by 12in. by 30in. high, moulded and set in cement			
			Provide the sum of £20 (twenty pounds) for carving Bath stone			
			Allow for stone-carver to have the use of scaffold			

CHIMNEYPIECES IN BATH STONE.

10	0	Cube.	In mantel with segmental moulded soffit			
12	0	,,	Do. stop moulded jamb			
63	0	Run.	12in. by 4in. shelf worked fair, moulded front edge, with back cut, and pinned into wall			
			No. 28. Ends to do., with quadrant corners, stop-moulded			
			No. 4. Moulded bracket out of 9in. by 3in. by 9in., front edge moulded, and let into mantel at back			
			No. 24. Do. all as do., but cut and pinned into brickwork			
			Clean down stonework, and leave all perfect.			

SLATE MASON.

29	0	Sup.	1in. planed one side lavatory top, including joints and fixing on bearers			
9	0	,,	1in. do. both sides division to urinal			
37	0	,,	1in. do. one side, back and ends fixed with proper cramps to wall			
8	0	,,	1½in. do. do. do. paving, bedded and jointed in mortar			
41	0	,,	Labour rounded edge to 1in. slate			
24	0	,,	Labour scribing 1in. slate to wall			
10	0	Run.	Labour rebate for 1in. slate and red-lead joint			
5	0	,,	6in. by 4in. slate circular sunk channel, set in cement			
			No. 6. Perforated rebated holes for 12in. basins			
			No. 2. Quadrant rounded corners to 1in. slate			
			No. 1. Hole through channel for brass grating 3in. diameter			
			Carried to summary			

CONTEMPORARY BRITISH MANUFACTURERS AND ART-WORKERS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

WE have already given three double pages of portraits under this series, and to-day we give the fourth plate, which commences with Mr. J. Westwood.

Mr. Joseph Westwood was born in 1844. He was educated at a private school at Dulwich. After leaving school, he went through his father's workshops, then to the drawing office, which eventually he had charge of, as well as the management of his father's works, this taking up some 20 years of his life. He is now proprietor of the firm of Joseph Westwood and Co., engineers and contractors, of Napier Yard, Millwall. He is also the proprietor and manufacturer of the well-known and universally - appreciated "Hawksley's Patent Treads," which are in use all over the kingdom, and are admittedly the best and most durable tread or step yet invented. He was elected some ten years ago a member of the Institution of Civil Engineers, is also a member of the Institution of Mechanical Engineers, a member of the Institution of Naval Architects, a life member of the Society of Engineers, Fellow of the Society of Arts, member of the British Archæological Association, &c.

Alexander Rottmann, founder of the well-known house of Rottmann, Strome and Co., London, as manufacturers and importers of Japanese leather papers, was born in London in 1858. His father was of the old and renowned firm of Gebhardt, Rottmann, and Co., of Lawrence-lane, Cheapside, E.C., who were the first to import borders and French paperhangings to this country some 30 to 40 years ago. Mr. Alex. Rottmann when quite young left England for Germany, and up to the age of 19 studied polytechnic subjects at Cologne, on the Rhine, where he passed the University examinations, with full intention of becoming an architect. He made designing and drawing his special study, through which he acquired great taste for ornamental decoration. Returning to London, he changed his mind regarding an architect's profession, and entered a mercantile career, where he became acquainted with the Japanese decorative trade at the house of Londos and Co., at that time the first Japanese and Oriental house. Coming across Japanese oil papers, which then were only made in grotesque designs, and used for fancy and native use, he could see a future for leather papers if properly developed and suited to decorative requirements, as far as colour and designs were concerned. In 1882 he started for Yokohama, and established the firm of A. Rottmann and Co., which soon after changed to the present firm of Rottmann, Strome, and Co. Mr. Rottmann left again for Europe, and established a central warehouse in St. Mary-Axe, London, E.C., for the sales of European requirements, after which he found it necessary to revisit Japan for further improvements of the materials, so in 1884 he made his second trip to Japan for this purpose, returning to England in the beginning of 1885. Seeing that the papers could be used to a greater extent if the designs of various periods were adapted and colours improved, Mr. Rottmann travelled throughout Europe to find good designs from museums and private collections. To show how the material found favour, we might mention that in 1880 the consumption was 200 rolls per month, whilst in 1890 the sales average 2,500 rolls per month. To produce this quantity of a hand-made paper, the manufacture gives employment to about 1,000 workmen, which formerly only employed a few families, so that it is to Mr. Rottmann's merit that so many workpeople are enjoying the advantages of this new industry. Several of the designs having more of Japanese character, are from his pencil, and he has devoted himself to ornamental designs in silks for seasons and drapery; these designs, whilst going away from every-day style, still have the Japanese character. In addition to being manufacturers of the leather paper, his firm import to a very large extent other materials for interior decorations—viz., vases, plaques, screens, embroideries, carvings, bronzes, &c., which are kept in stock in great variety. Mr. Rottmann's portrait is from the studio of Mr. C. A. Gaudy, of Bishopsgate-street Without, E.C.

Mr. Mark Fawcett is the head of the firm of Mark Fawcett and Co., fireproofing and constructional engineers, of 50, Queen Anne's Gate, Westminster, and is the inventor and patentee of the now well-known Fawcett's fireproof flooring. He was born at Lincoln in 1860, and educated at the Newland School. In 1875 he was apprenticed to Mr. W. D. Harrison, contractor, of Lincoln, and for four years worked at the bench. He also became an evening student at the Lincoln School of Science and Art, and during this time succeeded in passing the advanced and honours examinations in building construction, and also carried off some prizes for design and drawing. In 1879 he was articled to Messrs. Bellamy and Hardy, architects, of Lincoln, and, in consequence of his knowledge of constructional ironwork, was at once appointed to superintend various building and engineering works intrusted to them, particularly the New Corn Exchange and Markets and the Exchange Arcade. On the completion of his articles he assisted Mr. J. Thorpe for some time, working on the drawings for the main drainage of King's Lynn and the Horncastle water supply. In 1882 he came to London and entered the office of Mr. J. Douglass Mathews, F.R.I.B.A., as chief assistant, and remained with him until 1887, when he commenced practice on his own account. He first began to make experiments with a view to improving the construction of fireproof floors in 1886, but did not succeed in putting his theories into practice until the close of 1887, when he made a model of his patent Tubular Lintel, which he at once showed to his old master and friend, Mr. Mathews, who highly approved of it, and advised him to take out a patent. Mr. Mathews was the first to use his construction at Barclay and Fry's new factory in the Grove, Southwark, and has since used it for warehouses at Stoke Newington and Bethnal Green-road. Mr. Fawcett at once decided to work the patents himself, and in March last took into partnership his old friend and colleague, Mr. B. A. Elphicke (who was articled to Mr. Mathews) the style of the partnership being Mark Fawcett and Co. During the past year the demand for their construction has been rapidly increasing, the works at Reading are being largely extended, and they are also commencing to manufacture their patent Tubular Lintels at Nottingham. Recently, their fireproof floor has been chosen for the Children's Hospital, Great Ormond-street; block of offices, Billiter-street; warehouse, Smithfield; house, Burgess-hill; residential flats, St. Peter's Park; the Capital and Counties Bank, Guernsey; Swaylands house, Penshurst; the Royal Albert Hall Mansions; and other important buildings, altogether over a million superficial feet of floor area. The portrait given herewith is by Messrs. S. W. and E. Elmes, of Chelsea.

Mr. Arnold Wright Kershaw, the patentee of the pneumatic ventilator, is the son of David Kershaw, of Gomersal, in Leeds, whose ancestors were well-known builders and contractors in that neighbourhood for generations. He was born in 1853, and educated as an architect, being a pupil of Messrs. T. H. and F. Healey, of Bradford. He removed to Lancaster in 1879, being then appointed architect for the new large annexe of the Lancaster County Asylum. In 1882 he made extensive experiments with different forms of automatic ventilators, and in that year patented the pneumatic ventilator now well known to our readers. The ventilator soon became popular, and has developed a successful business now carried on at Custom House Buildings, St. George's Quay, Lancaster. We could not spare space for even a representative list of the many buildings, notably Government buildings, both at home and abroad, where these ventilators have been successfully adopted. The photograph printed to-day is by Mr. Davis, of Lancaster.

Mr. E. H. Shorland, of St. Gabriel's Works, Manchester, is the sole proprietor and manufacturer of the well-known patent Manchester grate, patent Manchester stove, and other warming and ventilating appliances. He is the son of the late Mr. G. L. Shorland (of the late firm of Shillito and Shorland), who was the original inventor and patentee of the Manchester School grate and Manchester stove. Mr. G. L. Shorland, whose name will always be associated with warming and ventilation, claimed to be the originator of vertical tube ventilation, commonly known as "Tobin's." Mr. E. H. Shorland succeeded to the business in 1880, since which time he has had the full management and control of the same. He has himself made many patented improvements in the Manchester grates, stoves and ventilators, and the business under his management has greatly extended. It would be impossible in this notice to give anything

approaching a list of the public buildings warmed and ventilated by Mr. E. H. Shorland; but the following are a few: Seamen's Barracks, Portsmouth, for H.M.'s Government; barracks, Devonport, for H.M.'s Government; Royal Naval Hospital and Royal Naval College, Greenwich, for H.M.'s Government; the Bank of England, London, and most of its branches throughout the country; Anglo-German Hospital, Rosario, for the Argentine Republic; Birmingham Workhouse Hospitals; Brentford Workhouse Hospitals and Infirmary; Manchester Workhouse Hospitals, Withington; Salford Workhouse Hospitals, Hope, near Manchester; Barnsley Workhouse Hospitals; Oldham Workhouse Hospitals; Coventry Workhouse Infirmary; Dartford Union Infirmary; Lancaster County Asylum, Prestwich, near Manchester; Argyle and Bute Asylum, Ardrishaig; Edinburgh Board Schools; Reading Board Schools; Bedford Elementary Schools, &c. Mr. E. H. Shorland was awarded a silver medal (the highest award) at the International Smoke Abatement Exhibition, London, 1882, and a prize medal at the Smoke Abatement Exhibition, Manchester; also a silver medal (highest award) at the Building Trades' Exhibition, London, 1886, by the Society of Architects. In all the improvements made to increase the efficiency of the patent Manchester grates and stoves, Mr. E. H. Shorland has always kept in view simplicity of construction and design, and to this may be attributed in a large degree the ever-growing popularity and success of the warm-air ventilating Manchester grates and stoves. The photograph reproduced was taken by Mr. Warwick Brookes, of Manchester.

Mr. John Hassall, managing partner of the firm of John Knowles and Co., Mount Pleasant Works, Wooden Box, Burton-on-Trent, is the nephew of the founder of the firm (the late Mr. John Knowles), and commenced his active connection with this business upon the death of Mr. Knowles in 1869. Mr. Knowles was a well-known railway contractor, and carried out many extensive works under the late George Stephenson and other eminent engineers, and it was during the construction of the Leicester and Burton line, half a century ago, that he came across the beds of fire and other clays from which originated the present extensive works. The staple manufactures are all kinds of fire resisting goods, and sanitary pipes and appliances used in connection with main sewerage works and house drainage. The former have a very high reputation, and are largely used by the principal steel and iron manufacturing firms in the north of England, Sheffield, the Midlands, and other parts of the United Kingdom. This firm is also engaged in the manufacture of every kind of fire-clay backs and linings for coal and gas stoves, and do a very extensive business therein. As regards their sanitary ware, this has more than a local reputation, and of late years the manufacfacture by them of drain-pipes, fitted with "Hassall's" patent safety joint, has developed to a large extent. This patent joint has earned warm eulogiums from the most eminent engineers and sanitary specialists of the day, and its capabilities have been successfully tested in the drainage of Acton, Birkenhead, Birmingham, Bexhill-on-Sea, Brighton, Bournemouth, Hastings, Hounslow, Kettering, London County Council, Leicester, Liverpool, Manchester, Newhaven, Nottingham and district, Richmond, and other parts of the Thames Valley, Sheffield, Walthamstow, and numerous others towns at home and abroad, as well as in the drainage of sundry private mansions and estates. The firm do a considerable export trade, and their fireclay wares, raw and manufactured, and also sanitary goods, are exported to the Continent, North America, South America, the West Indies, Japan, India, the Australian Colonies, and other places. They employ many hundreds of hands at their works and depots in Sheffield, Nottingham, Birmingham, and London. Mr. Hassall is also the hon. sec. of the Midland Association of Sanitary, Stoneware, and Fireclay Goods Manufacturers, and on the occasion of their first anniversary last January was presented with a handsome piece of solid silver plate in recognition of his services in connection therewith. Messrs. Elliott and Fry took the photograph given with these notes.

[Mr. W. F. Unsworth wishes us to state that in the designing of the Shakespeare Memorial, Stratford-on-Avon; the Hill, Stratford-on-Avon; and Shepherd's Spring, Hants; for which we gave him the entire credit as architect in our biographical notice last week, he was associated with Mr. Edward Dodgshun, now of Leeds, with whom he was then in partnership.]

ARCHITECTURAL ASSOCIATION: EXCURSION TO OXFORDSHIRE.

THE official programme for the forthcoming annual excursion of this Society has this week been issued to the members. It is the twenty-first of the series. The proceedings are to commence on Monday, August 11th, and the head-quarters of the party will be the Mitre Hotel at Oxford. Monday and Saturday will be devoted to the colleges, cathedral, and churches of the city; Tuesday: Iffley, Dorchester, and Ewelme will be visited; Wednesday: Stanton Harcourt, Witney, and Coggs; Thursday will be occupied by visits viâ Witney to Minster-Lovel, Asthall, and Burford; and Friday is to be occupied with Woodstock, Blenheim, Kidlington, and Water Eaton. The wisdom of confining the visits to a few good examples of work each day is shown by this list. In former years the programme has sometimes been somewhat overcrowded. Oxford itself would, of course, well furnish the whole week, but two days only could be spared out of the six, and for these a wise choice of subjects will be necessary to insure the inspection of the more important buildings, including some at least of the new work.

MORE DEFECTS IN LONDON BOARD SCHOOLS.

THE London School Board considered at their last meeting a report by the Works Committee on the defects discovered in the school in Goodrich-road, East Dulwich, one built in 1885-6 under the Board's present architect, Mr. Bailey. An expenditure of £2,400 upon it was now asked for, exclusive of the cost of rearranging the drainage, but including the cost of painting, which would in the ordinary way be about £500. A detailed report by the superior officer for repairs stated that some of the material was of fair quality, but that in some cases the quality was not that contracted for and paid for, and there was a great lack of skilled work. In the drains the joints had been covered with clay instead of being cemented, and leakage was the consequence. The joiners' work was very inferior, particularly at the framings of doors, and these had had to be filled up. In addition to the detailed defects, the officer said there were several matters which showed deviation from the terms of the specification or unskilful workmanship; the horizontal waste-pipes under the girls' and infants' ranges of lavatories were laid with a fall the wrong way; these had had to be taken up and refixed. The asphalte floors of the offices were laid with falls away from, instead of to, the gullies. As pools of water stood on these floors, it had been necessary to take them up and relay them. The zinc weathering on strings and cornices was not in many places sufficiently wide to be tucked into the brickwork and pointed as specified. Water consequently got under the flashings and injured the brickwork. The ironwork, such as bolts, straps, &c., specified for the roof timbers, had not all been provided. The brickwork in the spaces in the roof had not been made good around the roof-timbers, air-flues, and other places. The painting, repairs, &c., now in hand promised to cost from £1,500 to £2,000, exclusive of work to the drains. It did not appear necessary to interfere with the latter this year.

The architect, being called upon to reply, suggested that the clerk of the works should be called upon to account for the deviations from the specification. He pointed out the manner in which the tenders were invited for this school. "There were about a hundred builders on the Board's list, to each of whom a reply postcard was sent asking them if they would be willing to tender, so that they thus had the privilege of inviting themselves. This resulted in 22 tenders being received for this school, the highest being £19,812, and the lowest £17,170. He submitted an estimate before the tenders were opened, the amount being £18,115, or about £1,000 more than the lowest tender, and the fact that most of the builders on the Board's present selected list who tendered sent in prices above his estimate would show that this was quite low enough for the work. The builder stated that he lost heavily over the contract, and he became bankrupt in the following year." In conclusion, Mr. Bailey added that, in his opinion, this school was, with regard to plan and general arrangements, the best and most complete school for 1,600 children that the Board possessed, and he, as architect, felt most keenly that the scheme should have been marred by bad workmanship, and the case put forward for universal opprobrium.

Correspondence was put in to show that constant complaints had been made to the builders during the progress of the work, and bad work had been remedied. The action taken by the committee to remedy the defects at a cost of £2,400, inclusive of painting but exclusive of the drainage work necessary, was confirmed.

Mr. Raphael moved a resolution referring to these defects in the schools. The resolution took the form of an inquiry as to the architect's competency. The inquiry would elicit whether the Board expected too much from the architect, and imposed so many duties on him that it was impossible for him to visit the schools which were being built. Mr. Laing seconded the motion.

The Rev. H. Curtis moved, as an amendment, that there should be a reference to a special committee to report upon the defects at the Goodrich-road School, and at other schools, and to advise the Board upon the steps to be taken to prevent a recurrence of such a state of things in the future.

Mr. Whiteley seconded this amendment, which was accepted by Mr. Raphael, and adopted.

The Board received yesterday (Thursday) a report from the works committee with reference to Essex-street school, Tower Hamlets, opened in August, 1886, stating that the clerk of works, the measuring surveyor, and the superior officer for repairs had found various defects in the ceilings, drains, and tar-paving. The committee recommended that an action be entered against the contractor (whose name was given) to recover damages for breaches of contract.

CHIPS.

At a sale of oak timber on the Wentworth Woodhouse estate, belonging to Earl Fitzwilliam, very high prices were obtained, one tree fetching £110, said to be the largest sum yet given at an auction for any English-grown tree.

A public drinking fountain was presented last week to West Bay, Bridport, by a lady. It is of Aberdeen granite and Portland stone, and was executed by Mr. Milverton, of Bridport.

The Sunday school attached to the David Thomas Memorial Church at Bristol, which has been enlarged and reconstructed at a cost of £1,250, was reopened on the 10th inst. The assembly hall is 60ft. by 26ft., and is 28ft. in height. It has a gallery off which and on the ground floor are classrooms on either side, and the total accommodation is for 600 children and 100 infants. The style is Early English, harmonising with the church. Mr. Alfred Harford, Broad-street, Bristol, is the architect, and Messrs. Robert Wilkins and Sons, Surrey-street, in the same city, are the contractors.

A public hall at Newtown, St. Boswell's, N.B., erected as a memorial to the late Hon. Robert Baillie, was formally opened on Saturday. It has been built from plans by Messrs. Hardy and Wight, of Edinburgh, and includes a room for lectures and a reading room.

A marble bust of Richard Jeffries, "the prose poet of the Wiltshire Downs," is to be placed in Salisbury Cathedral. It will be executed by Miss Margaret Thomas.

The School Board for Leamington adopted at their last meeting plans submitted in competition by Messrs. Nicholls and Son for new schools for 300 boys in Shrubland-street, subject to revision and amendment by Mr. Foster, their architect, the arrangement for commission being that if the work is eventually intrusted to Mr. Foster he is to receive 5 per cent., but to repay out of this 20 guineas towards the £50 paid by the board as a premium to Messrs. Nicholls and Son.

On Thursday afternoon in last week the memorial stones for a new Welsh Calvinistic Methodist chapel were laid at Briton Ferry. The site is in Ynismardy-road, and the chapel will accommodate about five hundred persons. The architect for the building is Mr. W. Jones, Ystrad, Rhondda Valley, and the contractor Mr. Lloyd, Cymmer.

Messrs. Pitman and Son, of Newgate-street, E.C., are now completing the painting and decorative works which have for many weeks past been in progress at the unique City church of St. Peter-le-Poer, Old Broad-street. Their work also includes two large ornamental leaded glass windows. The architects are Messrs. A. and E. Billing, of Tooley-street, S.E.

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SIX CONTEMPORARY BRITISH MANUFACTURERS AND ART WORKERS.—DESIGNS FOR THE SHEFFIELD MUNICIPAL BUILDINGS.—TREFUSIS, FALMOUTH.—MERIOOLA, MAIDENHEAD.

Our Illustrations.

CONTEMPORARY BRITISH MANUFACTURERS AND ART-WORKERS.

(SEE description on p. 106.)

SHEFFIELD MUNICIPAL BUILDINGS—THE FINAL COMPETITION DESIGNS.

WE complete to-day our series of illustrations of the six final designs, prepared by the selected competitors, by giving drawings of Messrs. Harvey and Smith's design, Mr. James Lindsay's design, and that by Messrs. Flockton and Gibbs. We have already illustrated the chosen design by Mr. Mountford, and those by Mr. Tulloch and Mr. Hare, the two other competitors. Our readers can now, for the first time, compare the several designs properly, as they have been reproduced in our pages with the same uniform clearness, thus bringing out into due prominence the relative merits of each of the compositions. Messrs. William Harvey and Bernard Smith's design is thus described in their report:—The drawings show several important modifications of the original plan. The large principal offices are arranged on the ground floor level as before, but the entrance from Norfolk-street has been abandoned, and a large entrance and staircase hall placed at the corner of Surrey and Norfolk-streets. The borough accountant's office has been so arranged that all the rooms of the staff now open direct into the general office. The rates office is approached from Pinstone-street, Surrey-street, and Cheney-row, and, as now planned, the Pinstone-street entrance can be closed if required on special occasions, without in any way interfering with the general work of the office. The arrangement of the water department has been considerably varied, by the accompanying plan the offices of the staff are all grouped around the general office, a private corridor communicates and avoids the necessity of the staff entering the general office in order to reach each other's offices; a staircase at the end of the corridor next Surrey-street leads direct to the engineer's office and drawing-office on the floor above. An alteration has been made in the borough surveyor's department by which the district surveyor's office is brought close to the surveyor's office. In the health department the general office has been placed at the corner of Pinstone-street and Cheney-row, the medical offices and cleansing inspector's offices being placed on each side of the Cheney-row entrance. On the first floor the principal alterations consist of the arrangement for a second mayor's parlour for business use, the provision of a lobby leading directly from the council chamber ante-room to the committee-rooms and a rearrangement of the town clerk's department which it is considered would prove more convenient. An approximate estimate of the cost of the proposed building is £79,934 17s. 7d.

Mr. James Lindsay thus refers to his design:—"Simplicity has been aimed at in the block-plan, as well as in the lines of the corridors, and none of the business rooms obtain light from the two inclosed areas, with exception of the water office, which is top-lighted. The principal or mayor's entrance is from Pinstone-street, and the general business entrance is from Surrey-street; additional entrances are provided from Norfolk-street, as well as Cheney-row, and the basement floor next Cheney-row can be entered on the level from the large open court. The water and accountant's departments are placed on the lower ground floor, to the right and left of the Surrey-street entrance, the general office in each case having ample public and counter space, and serves as inquiry to the various rooms of the officials, which are grouped in view and in front of the counters. The accountant's department is all on one floor, but the water department is continued on the upper ground floor. By placing the two principal departments on the lower ground floor, and close to the entrance, would relieve the corridors and staircases of a considerable amount of traffic which at times will happen in connection with these departments. The council-chamber, together with its suite of six committee-rooms, are so situated that they would all be absolutely free, not only from external disturbing elements, but also from the general business traffic within the building. Access to the council-chamber can only be had through its ante-room, and also a doorway from the committee corridor. The sub-committee rooms are centrally placed, and within easy reach of the various departments. The unusual treatment of the principal stairs has been adopted, so that the council-chamber should be brought into closer connection with the mayor's suite, and the passage connecting the north and south landings, with a balustrade, and 10ft. of open space on one side, is certainly preferable to the usual 10ft. or 11ft. corridor. The cubic contents measuring from the datum line 262·0 are 1,843,600c.ft."

Messrs. Flockton and Gibbs, in their report, from which we quote, give the following explanatory statement referring to their design: The building is placed within the boundaries of the site, having its principal front and main entrance facing directly the large open space, about 225ft. long and 202ft. wide, formed by the junction of the five streets, the obelisk in the middle of which is in the central line of the building. The main entrance is thus fixed in the most prominent and convenient position for access from all five streets. The other three fronts have also open spaces between them and Pinstone-street, St. Paul's Churchyard, and Surrey-street, and thus an abundant supply of light and air is secured on all sides, while the building is exceptionally well placed for being seen to advantage from all surrounding points. The one-story building in Surrey-street is so comparatively low as not to interfere with these advantages, but rather to enhance the effect of the main building by spreading its base, and giving attachment to the ground. The fine open space or "place" resulting from the street improvements in this locality is by this design turned to the greatest advantage both to the building and itself. A considerable plot of land at the Norfolk-street end, sufficient to provide accommodation for three or four additional departments, remains unappropriated. Each set of offices for a department is made complete in itself, the entrance for the public being into and by way of the general or inquiry office, from which access is easy and direct to a corridor, in which are the private offices. These corridors give the officers the means of communicating with each other without entering the general office, and also with the general office at different points. The advantages of this plan over the usual arrangement of public corridors consist, not merely in the feature that no facilities are given for the public to seek admittance where they are not wanted; but that the private offices are rendered more quiet and undisturbed, the intercommunication more easy, and the control by the heads of the department more perfect. The departments, except the health department, are all approached from the central hall with its staircases, which is entered from the outside by the principal doorway. Private entrances and staircases and other means of communication are provided for the officials. The entrances to the accountant's and water departments are on opposite sides of the central hall, and from the hall can be seen those to the department of the town clerk and the borough surveyor, so that one hall porter centrally placed could control the whole. The health department has a separate entrance from Surrey-street. The council-chamber, reception, and committee rooms occupy an entire floor. The pay office, smiths' shop, meter-testing, weights and measures, and room for sale of disinfectants, also the public waiting-rooms, lavatories, &c., it has been thought very desirable to keep outside the main structure, and they are therefore provided in detached buildings. The borough accountant's general office has a counter 78ft. long, and in addition to accommodation as shown on the plan for 30 clerks at desks, there is room for an extension of desks so as, if required, to raise this number to 44. This and the water-works general office are lighted partly from skylights and partly from windows 5ft. 6in. high on each side of the raised central portions; these windows being also available for ventilation. The council chamber is in the form best adapted for speaking and hearing, nearer a square than a semicircle in proportion, has abundant light, and is in a position free from noise. It will seat more than the present number of members of the Council.

	Net cubical contents.
Foundations from 10ft. below present surface up to area level ...	122,143
Tower from 12ft. below present surface up to area level ...	1211,621
Superstructure from area level to eaves spouts	
Roofs ...	132,075
Dormer windows, chimneys, turrets above eaves ...	31,546
Tower above eaves ...	44,503
Area walls, balustrades, steps, &c. ...	8,651
Total ...	15,540,539

These works can be carried out for £80,000.

TREFUSIS.

THIS house, now in course of erection, is situate on the slope of the hill overlooking Falmouth Harbour. The view from this hill is said to be one of the finest in Europe, embracing as it does river, harbour, ocean, woodland, rich pasture land, distant hills, and the quaint old town of Falmouth. An Early Tudor mansion-house formerly stood where the new building is rising. That was very much altered and enlarged in the Early Georgian style, and that in turn, not having been occupied for many years, fell into a state of dilapidation and decay, necessitating rebuilding. Lord Clinton's principal residences are in Devonshire and Scotland, and this at Trefusis is only intended as subsidiary. It is not, therefore, of large dimensions, and is for only occasional use, and for the most part will be in charge of the manager of the home farm. The walls are erected of granite in natural random work, and all the dressings are of granite from the celebrated Penryn quarries, and the roofs are of grey slate. Some quaint fireplaces in granite in the Tudor mansion have been refixed, and the principal rooms will be lined with oak panelling taken from the Georgian mansion, the design of the new building being affected by that consideration. The builder is Mr. Kelway, of Falmouth, and the architect Mr. James Hicks, M.S.A., Redruth.

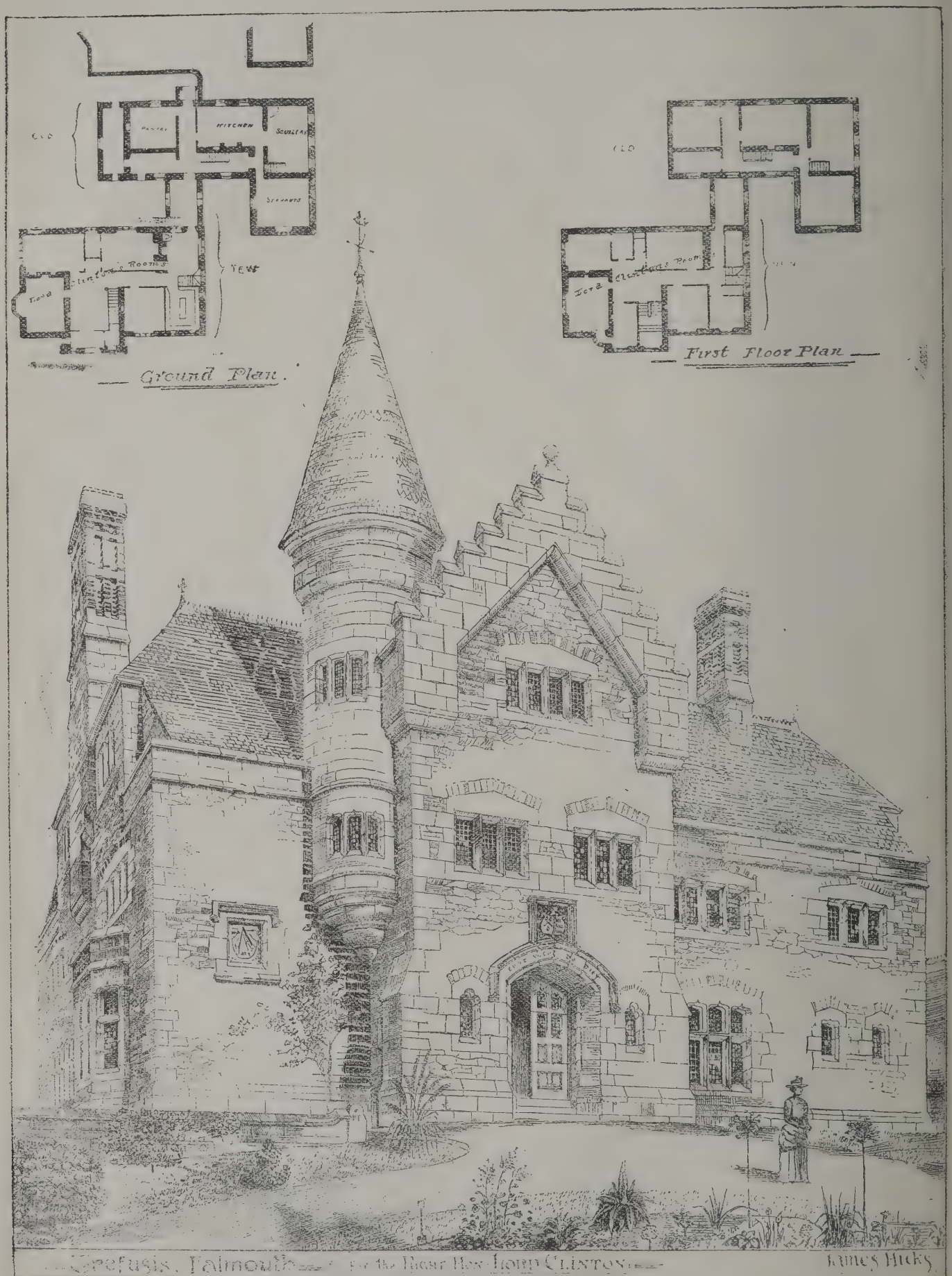
"MERIOOLA," MAIDENHEAD COURT ESTATE, BERKS.

THIS residence has just been completed on the above estate, situate just above Boulter's Lock, and overlooking Clieveden Woods. The exterior is in red brick and half-timber work, all of which is in oak; the internal work is of an expensive character, the entire staircase being in wainscot. The drawing-room has been treated in the Arabesque style. The total cost, inclusive of lodge, stabling, &c., was £7,000. The works were carried out by Mr. G. H. Gibson, of High Wycombe, Bucks, from the designs of Mr. Frederick Wheeler, F.R.I.B.A., 22, Chancery-lane, W.C., and 50, Carfax, Horsham, Sussex.

A memorial cross, 10ft. 6in. in height, from designs by Mr. Mileham, of Chislehurst, has been placed on the spot in the Mamore forest, in Scotland, where the Rev. A. H. Mackonochie was found dead in December, 1887.

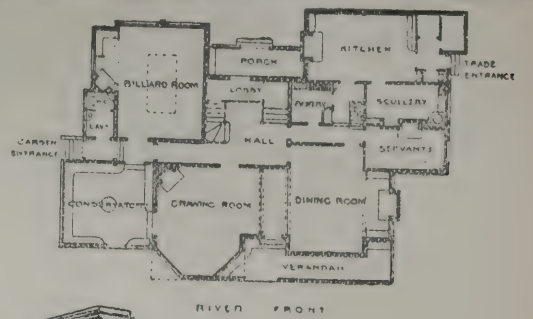
Mr. S. J. Smith, inspector under the Local Government Board, held an inquiry on Wednesday week at Bournemouth with respect to the application by the Improvement Commissioners for sanction to borrow £8,400 for works for the flushing and ventilation of sewers and the watering of roads, £3,300 for works of outfall sewerage at Alum Chine, £1,500 for alterations to West Yard, £800 for providing hydrants, £320 for works of private street improvement, and £200 for addition to a hospital.

UNIVERSITY OF ILLINOIS


Ground Plan.
First Floor Plan
Refusis, Falmouth.
for the Right Hon. Lord Clinton.
James Hicks.

"Merioola" · Maidenhead · Berks.

Frederick Wheeler · FRIBA · ARCHT



WAYSIDE NOTES.

THE Earl of Rosebery has resigned his position as Chairman to the London County Council amid the splendour of many "opening" ceremonials. That much-needed structure, the new Battersea Bridge, was formally opened for traffic on Monday afternoon, and on the same day the new street running from the Holborn Town Hall to the Farrington-road was duly inaugurated. No less a boon is this latter improvement, although the full benefit of its construction may not be apparent until the remainder of the proposed thoroughfare leading to the "Angel" at Islington be constructed. In thus closing his arduous duties as chairman to the Council, the noble Earl brings to a conclusion a term of service to the citizens of London that should leave behind a feeling of indebtedness. What mistakes the Council would have made had not their chairman held the guiding reins with such a firm hand, it would be difficult to say; but those who have habitually perused the reports of the Council's meetings know how admirably the offices of the chair have been fulfilled. To have so managed affairs that the public remain pleased with the success, and at the same time to have preserved equanimity among the councillors themselves is to have accomplished no small feat, seeing that the body of which the Earl of Rosebery took command is even now but young and inexperienced.

Sir John Lubbock, who was elected chairman on Tuesday by a majority of 33, takes up the reins after the "breaking in," so to speak, and, consequently, should be in a position to better and more easily restrain any *breaking out*, such as that which occurred at the Council's last meeting on the occasion of a discussion as to London improvements. It seems a pity that so wonderfully little business was got through at this meeting, and that such prosaic matters as street improvements and the like cannot be discussed without heat and excitement. So far as I know, all the proposals embodied in the reports of the Improvements Committee may be classed as "necessary." The Isle of Dogs is to me almost as mysterious and unexplored as any of the Sandwich Isles group, so cannot say much as to the necessity for widening its four bridges, which, as at present existing, a councillor declared to be "a disgrace to the community." But the remaining districts to be improved lie within the bounds of civilisation, and we can appreciate the improvements to be made. The Chelsea Embankment scheme I described last week, and will, doubtless, be generally admitted to be "necessary" enough even to please Mr. Councillor Carr-Gomm. We know, too, that an improving hand could readily busy itself in Kentish Town and in Deptford, and Vauxhall and Hammersmith are not in every thoroughfare so perfect as to make improvement superfluous. Kensington High-street may be vastly bettered, as I have often pointed out, and it should receive early attention. Now, what there is in the consideration of these matters to rouse the County Council to vestry-like behaviour, will pass the comprehension of many. The Isle of Dogs Improvement Scheme was not agreed to without quite a scene, and then only on condition of the Limehouse District Board's contributing certain funds to the cost of the widening of the bridges—a condition that may be, and doubtless is, only just and fair; but one that could surely have been arranged in a quiet and business like manner. Disorder almost as pronounced seems to have characterised the discussion on the Kentish Town improvements. It was finally agreed to take steps to widen Fortess-road, in that neighbourhood, but not until after much dissension. The spirit of order and despatch in the discussions of public corporations would seem to have gone by with the good old times. Its opposites are ever ready to break out in any assembly of to-day, and they are only to be restrained with a firm hand. Lord Rosebery effectually did so during his term of chairmanship to the London County Council, and for the sake of public business it is to be hoped that the new chairman will be equally firm and resolute.

Sorry I was not "up" in the price of coals; but perhaps readers will not think that it should be part of my duty to follow the minute variations in the coal-market. Perhaps I can please "Hiram" better on the jerry-building question. He has reason in believing that restrictions as to the time of surveying a builder's operations will, in general, encourage bad construction. In the case of ordinary contracts, where one is doubtful of the contractor, there is nothing like dropping on him at all hours of the day when least expected. I was unaware of the new regulations as to district surveyors, which do not seem likely to promote sounder construction than in days past. At the same time, the evil will be most marked in connection with buildings erected without architects, and will not be so pronounced where these latter are employed. Between eleven and four o'clock should allow of sufficient time for the surveyors to see that the main provisions of the Building Acts are fulfilled: the details of building construction may be safely left to the architects engaged. Where there is no architect the district surveyor has more to do—and he should have—and it would be an advantage for him to be enabled to look in here and there at any odd time. I daresay that many of the district surveyors will be sorry that they are confined to the hours mentioned by your correspondent, wherein they may inspect the works within their jurisdiction; for it may often happen that it would be very convenient for them to get through certain official inspections earlier or later. The exact purpose and the wisdom of the alteration is therefore not at once apparent. It is certainly hampering the surveyor's power for good, and facilitating those occasions when the builder is enabled to hide away a wonderful amount of doubtful work in a very short time. If, therefore, "Hiram" be a district surveyor, he has my sympathy, which I trust may in some measure compensate for my lack of knowledge of the price of coals.

I have just been getting my hand in for the holiday season by a preliminary run down to North Wales, and, although mid-day Friday at Euston to nearly midnight Tuesday at the same place doesn't allow of a vast deal of sight-seeing, I managed to get in a small stock of mountain air and note a fact or two with respect to old architecture. Among other things I made a careful inspection of old Conway Castle, a building many pass by in the Irish expresses, but comparatively few stay to inspect, unless, as in my own case, they find themselves in the neighbourhood with a few hours to spare. I do not know of any old ruined castle that has given me more enjoyment in its inspection than this massive Welsh stronghold. One is doubtless much influenced by its beautiful position overlooking the waters of the Conway, and at the foot of the long slope that sweeps up to the heathery summit of one of the most imposing of the Welsh mountains, which also proves a grand background to the old ruin when the spectator stands on the other side of the river. Nearer at hand the aspect of the north side of the castle is a striking example of the power of simplicity in composition and of breadth of effect. The four great round towers, projecting so boldly from the main castle wall, when seen in sharp perspective, have a broadness of ultimate effect of which I have not seen the equal. Internally, there has evidently been beautiful work in windows, doors, and fireplaces, and the so-called Queen's Chapel is a gem. This feature is curiously unlike English or Welsh work, and reminds me more than anything of some of the architectural designs executed in granite that I have met with in Brittany. May-be that when the details were intact this effect would not have been produced; but as it now stands, in glorious decay, it is very apparent. The name "Queen's Chapel" I take to be somwhat of a misnomer. It is a lovely little recess in the tower called the "Queen's Tower," and very like a tiny apsidal chapel; but it may have been simply an ornamental recess or bay. Anyhow, whatsoever its uses may have been, it is a gem of design, and classes A1 among my memories.

In that quaint old home in the town of Conway—the *Plas Mawr*—the Royal Cambrian Academy is holding an exhibition of pictures, many of which are fine, and to the Englishman of additional interest as affording an opportunity of seeing a large number of Welsh scenes in one and the same collection. It was understood that the Academy was to have erected a new gallery in connection with the Plas Mawr which it has made its home; but no signs of building appear so far, the garden, suggested as a site for the gallery, being truly a "howling wilderness" full of slate blocks and general *débris*. It would not be a bad idea for the Academy to erect the gallery, as to persons anything over quite ordinary stature the strangely low doorways in the old Plas Mawr are rather too numerous. Of the exhibition I saw something, but the chief attraction was naturally the old house itself with its fine stone chimney-pieces, quaint plaster moulding, oak panelling, and the splendid black oak furniture—tables, chairs, chests, &c., that must be enchanting to those architects who may perhaps be called *furniture specialists*.

Conway Church, too, I saw, and wondered at the eccentricity of its builders in placing the nave arcade upon columns about half-a-foot wider than the walling above the arches. Like most digressions of this nature, the effect is more curious than beautiful, but ample compensation for this awkward piece of design—if design had anything to do with the matter: I rather think it was caused by a haphazard method of going to work—is to be found in other interesting features of Conway Church. Besides Conway I saw much whilst in the Principality. Llandudno and Penmaenmawr are as flourishing as they deserve to be, beautiful watering-places as they are, and, from all I could see, building is as lively thereabouts as anywhere, and the jerry-builder rampageth not the land. I did not get to the curious old church in the parish of Llanfairpwllgwyngyllgoqerychwyrndrobwlltysiliogogogoch; but I made my way over the Great Orme's Head to the tiny little church of St. Tudno, that looks out from its breezy height over the waters of St. George's Channel, and which, being too small for fine weather congregations, possesses an open-air combined pulpit and reading desk in the little churchyard. And as I, moreover, rambled among the streets and "rows" of Chester, and about the nave and aisle, and choir of the beautiful cathedral of that town on my homeward journey, I think I may say I did pretty well in the way of a Friday to Tuesday's outing. GOTH.

NOTES ON BUILDING PRICES.—IV.

By JOHN LEANING.

PRELIMINARY AND MISCELLANEOUS ITEMS.

THESE, whether they appear in a Bill of Quantities or Specifications or not, must always be allowed for in making an estimate, and they are better kept separate than included in the allowance on the items for profit.

Scaffolding.—The use of scaffolding and sheds may be looked upon as establishment charges, but they are most conveniently and exactly dealt with in their connection with a particular building. As they are means to the end of obtaining a profit, they had better be treated as a net outlay, and no profit added. Some builders calculate cost of scaffolding at so much for each rod of brickwork. Probably under ordinary circumstances it costs 4s. per rod. An exact calculation may be made by taking out the quantities of it, a row of scaffold poles at the usual distance completely encircling the building ledgers at about 5ft. apart, and the necessary putlogs, boards, ladders, and cords, calculate the cost, and add on this cost, say, 7½ per cent. per annum for interest on capital and depreciation, add labour, fixing, and the number of loads carted. When the work is in the country, the number of loads requiring carting and railway carriage must be allowed for. For large halls or churches, interior as well as exterior scaffolding will be required, and the use of this should be separately calculated. The cost of scaffolding will vary according to circumstances. Sometimes the builder may obtain work in the neighbourhood of another building from which the scaffolding has not yet been removed—he can consequently transfer it at a small expense; at other times the cost of carriage is so great that it will better serve his purpose to buy new in the vicinity of the proposed building. It is the frequent practice of the contractor for railways, docks, canals, or other great works of engineering to buy new plant for a particular work, selling it at the close for what it will fetch. When works are delayed for a long period, as sometimes happens, hire of scaffolding will probably be claimed, and properly so. The decay of scaffolding is rapid; a year's delay in the progress of a building leaves the cords useless for another work, and many of the poles badly decayed at

their butts. The boards and putlogs would probably have suffered but little. If a definite charge for scaffolding appears in the deposited bill of quantities, the stipulated time for the completion of the building may be compared with the time of delay, and a rate per week, month, or year calculated in proportion, or the scaffolding may be valued at the subjoined rates, and the value of its hire calculated as a percentage of its first cost. 7½ per cent. per annum would be enough—*i.e.*, 5 per cent. interest on capital, and 2½ per cent. for depreciation; or the charge may be estimated from the subjoined list of net charges in London for hire of building plant, which would much exceed a calculation on the lines first suggested, and are rarely allowed by experienced assessors:—

LADDERS.	If One day only.	FIRST WEEK.		SECOND WEEK.		AFTER SECOND WEEK.	
		per day.	per 6 days.	per day.	per 6 days.	per day.	per 6 days.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
10 to 20 rounds	0 6	0 4	1 9	0 3	1 3	0 2	0 9
21 to 30 ,,	0 7	0 5	2 0	0 4	1 6	0 3	1 0
31 to 40 ,,	0 9	0 7	2 6	0 5	2 0	0 4	1 6
41 to 50 ,,	1 0	0 10	4 0	0 8	3 0	0 6	2 6
51 to 60 ,,	1 3	1 0	5 0	0 10	4 0	0 8	3 0
61 to 70 ,,	1 6	1 2	6 0	1 0	4 6	0 9	3 6
71 to 80 ,,	1 9	1 5	7 0	1 2	5 6	0 11	5 0
81 to 85 ,,	2 0	1 7	8 0	1 4	7 0	1 2	6 0
86 to 90 ,,	2 6	2 0	10 6	1 9	9 0	1 6	7 6
91 to 95 ,,	3 0	2 3	12 0	2 0	10 0	1 8	8 6
96 to 100 ,,	3 6	2 9	14 0	2 4	12 0	2 0	9 6
101 to 105 ,,	4 0	3 3	17 0	2 10	14 6	2 5	11 6
Crippels (iron) ..... each	0 8	0 6	2 0	0 4	1 6	0 3	1 3
Crippels (wood) ..... ,,	0 8	0 6	2 0	0 4	1 6	0 3	1 3
Barrows	0 8	0 6	2 0	0 4	1 6	0 3	1 0

SWING SCAFFOLDS for Hire.	No charge less than Six days, 20s.							
Painter's machines each	—	0 6	2 0	0 4	1 6	0 3	1 0	
	1st day	2nd day	3rd day					
Swing seat, 2 blocks, and fall rope	3 0	2 6	2 0	—	—	—	—	

BUILDERS' AND PAINTERS' TRESTLES.—EACH TRESTLE.								
6 to 8 feet	0 8	0 6	2 0	0 4	1 6	0 3	1 0	
8 to 11 ,,	0 10	0 7	2 6	0 5	2 0	0 4	1 6	
11 to 13 ,,	1 0	0 9	3 6	0 7	2 6	0 5	2 0	
13 to 15 ,,	1 3	0 11	4 6	0 9	3 6	0 7	2 6	
15 to 17 ,,	1 6	1 2	6 0	1 0	4 6	0 9	3 6	
17 to 20 ,,	1 9	1 4	7 0	1 2	6 0	1 0	5 0	

STEPS, SWING BACK OR DOUBLE.								
6 to 8 feet	0 7	0 5	2 0	0 4	1 6	0 3	1 0	
8 to 10 ,,	0 9	0 7	3 0	0 6	2 0	0 4	1 6	
10 to 12 ,,	0 11	0 9	4 0	0 8	3 0	0 6	2 0	
12 to 14 ,,	1 2	1 0	5 0	0 9	3 6	0 7	2 6	

MISCELLANEOUS.								
Ladder fall	—	0 6	2 0	0 4	1 6	0 3	1 0	
Wheel only	0 6	0 4	1 9	0 3	1 3	0 2	0 9	
Wheel and fall	1 6	1 3	6 0	1 0	4 6	0 9	3 6	
Wheel and fall and Slings	1 9	1 6	7 6	1 2	5 6	0 10	4 6	
Wheel and Slings	0 9	0 6	2 0	0 4	1 6	0 3	1 0	
Chain Slings ..... each	0 8	0 6	2 0	0 4	1 6	0 3	1 3	
Pumps	—	3 0	15 0	2 6	12 6	2 0	10 0	
Drain machines	—	2 0	10 0	1 6	8 0	1 4	6 0	
Floor cramps	1 3	1 0	5 0	0 10	4 0	0 8	2 6	
Braziers	—	0 6	2 0	0 4	1 6	0 3	1 0	
		per day.	per 7 days.	per day.	per 7 days.	per day.	per 7 days.	
Drop or splash cloths, each	0 6	0 4	1 9	0 3	1 3	0 2	0 9	
Tarpaulins	1 0	0 9	3 6	0 6	3 0	0 5	2 6	

	1st Day.	2nd Day.	After 2nd Day. Per day.
	3s. 6d.	3s. 0d.	2s. 0d.
Screw jack, large	1 3	1 0	0 9
,, ,, small	2 0	1 6	1 0
,, ,, winch	3 0	2 0	1 6
Crab	3 0	2 6	2 0
Three blocks and fall	2 6	2 3	2 0
Two ,, ,, ,,	2 0	1 9	1 6
One ,, ,, ,,	2 0	1 9	1 6
One long fall only	3 0	2 6	2 0
Weston's pulley blocks	0 8	0 6	0 4
One block only			

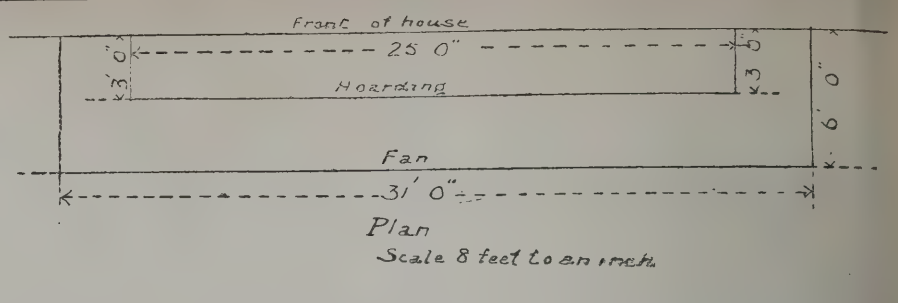
SCAFFOLDING, EACH PER DOZEN.	Any time not exceeding Two Weeks.			Aftr 2nd week.	
				day.	wk.
Boards, cords, & putlogs	No charge less	1s. 9d.	than 2s.	2d.	8d.
Poles, 22ft. and under		2 6	for 2 wks.	2d.	9d.
,, 24ft. to 35ft.		5 0		4d.	1s6d

CONDITIONS OF HIRING.

1st. The scaffolding, fall ropes, &c., are sent out under careful supervision; but hirers should themselves, or by their agents, see that the goods hired are sound and sufficient for the purposes to which they may be applied, as ———— will not be responsible for any damage or loss that may occur through their unfitness or insufficiency.

2nd. A deposit is required to be left in all cases, as security on goods hired, until the articles are returned. An extra charge if less than a dozen is hired, and no charge less than a day made.

3rd. All goods to be taken from and returned to the rack or shed at the hirer's expense and risk. The day of hiring and the day of return are charged as whole days, irrespective of the hour at which the goods are hired or returned. All deficiency or damage to goods on hire will be charged for, together with the hire of, up to and including the day such deficiency has been ascertained. When any or all goods are returned, the deposit note must be brought with them, without which no deposit will be returned.



Plan
Scale 8 feet to an inch

NET PRICES OF SCAFFOLDING AT DOCKS OR TIMBER MERCHANT'S.

To these prices must be added the cost of carting (see cartage), whipping the ends of the cords, worth ¾d. each, and shoeing the ends of the scaffold-boards with hoop-iron—cost about 2d. each board. Merchants charge 3s. per cwt. for cutting into lengths and whipping scaffold cords.

	s.	d.	
Petersburg poles, 22ft.	1	6	each.
,, ,, 28ft.	2	9	,,
,, ,, 35ft.	5	0	,,
,, ,, 42ft.	7	0	,,
Birch putlogs	6		3 per dozen.
Spruce scaffold boards 1½ by 9, as 12ft.	1		4 each.

Scaffold cords:—

Jute	18	6 per cwt.	1cwt. will cut about 4doz. 16ft. cords.
Ordinary hemp	32	0 ,,	
Staple hemp	36	0 ,,	
Whipping	0	10 per skein	

LADDERS, AT PER ROUND.

12 rounds and under	0s. 5d.
13 and not exceeding 30	0 6
31 ,, ,, 45	0 7
46 ,, ,, 55	0 8
56 ,, ,, 60	0 8½
61 ,, ,, 65	0 9½
66 ,, ,, 70	0 10½
71 ,, ,, 75	0 11
76 ,, ,, 80	1 2
81 ,, ,, 85	1 5
86 ,, ,, 90	1 8
91 ,, ,, 95	2 1
96 ,, ,, 100	2 6

Painting three coats plain colour, 1½d. per round extra; iron bolts, 8d. each extra.

EXCAVATOR'S BARROWS.

Stout ash frame, 1in. elm top, full size, with leg and side stays, 14s.; ditto, extra large, with cleats to sides and two bolts through frame, and long iron stays bolted to bottom of legs, 15s. The cost of machinery, as mortar-mills, portable engines, travelling cranes, &c., may be readily obtained from the published lists of the manufacturers. The trade discounts are various—generally about 10 per cent. The depreciation of machinery per annum on first cost, according to Molesworth, is as follows:—

Engines	6 per cent.
Boilers	10 ,, ,,
Machines	7½ ,, ,,

And this is pretty nearly in accord with other authorities.

The foregoing deals with scaffolding of the ordinary character. In large buildings, it will be necessary to use scaffolding of squared timber connected by iron dogs and bolts. In such a case it must be designed, and the quantities taken out charging it as use and waste. Twenty feet or thereabouts to a façade will be enough to base the whole calculation upon. Illustrations of scaffolds of this kind are to be found in Spon's "Dictionary of Engineering" and Seddon's "Builder's Work." See also the article "Scaffold" in the "Dictionary of the Architectural Society," and Cresy's "Encyclopædia of Civil Engineering"; and many interesting examples may be found in the *Transactions* of the Institution of Civil Engineers.

HIRE OF TARPAULINS.

18ft. by 12ft... 1s. 3d. per week, or any less period.
24ft. by 18ft... 2 6 ,, ,,

For any period over 28 days:—
18ft. by 12ft... 1s. 0d. per week.
24ft. by 18ft... 2 0 ,,

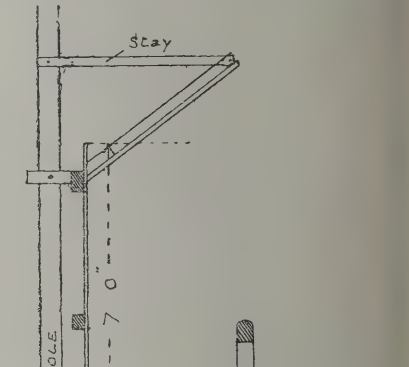
Some schedules regulate the hire of tarpaulins as follows:—

TARPAULINS FROM 60 TO 900FT. EACH PER 10 YARDS, SUPERFICIAL OR UNDER.

First Week.		Second Week.		Third Week.		After Third Week.	
Day	week.	day	week.	day.	week.	day.	week.
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
0 1½	0 6	0 1	0 4	0 0½	0 2	0 0½	0 1

These would generally be used in the construction of temporary roofs, which would involve some arrangement of supports for the tarpaulins. The estimator must make a calculation of the material, pricing it as use and waste, and adding thereto the cost of fixing and removal. The same principle must be adopted for temporary floors. These contingent arrangements are so various that the only course open is clearly to realise the requirements, design something suitable, and price it.

Hoarding.—When the work involves the pulling down of an old building, enough timber and boarding can generally be obtained for use as a hoarding, or the builder has possibly more old material at his yard than he well knows what to do with, and this is available for such purposes.



Section of Hoarding
footway & fan
Scale 4 feet to an inch

The outlay is then for cartage, fixing, and removal only. When there is no old material new must be used, and the only exact way is to realise what will be necessary, and measure and value it. We will assume a case as follows, one of the simplest kind:—

Hoarding, 7ft. high, 25ft. long, with two 3ft. returns—31ft. lineal in all.
Planked footway, 3ft. wide, with post and rail.
Fan the whole length of frontage.

The sketch is a mere assumption; the variety of hoarding is considerable, but the student or

estimator will in every case be obliged to assume omething. The prices will vary according to xtent of carting, and kind of material used.

HOARDING.

					s.	d.
1.0						
7.0						
—	217·0ft. ¾in. rough boarding (available for roofs in future); 2½ squares at 14s. 6d., one half cost for use and waste..				16	4
/	Extra for forming gate				3	0
/	Pair 18in. cross garnets, and fixing, 1s. 6d., half cost				0	9
/	Padlock hasp and staple, and do., 2s., half cost				1	0
31	0					
	6					
	4					
—		5	2	Fir in rails.		
1/31	0					
	4					
	3	5	2			
9/	7	0				
	4					
	3	5	3	Posts.		
6/	2	0				
	4					
	3	1	0	Stays.		
—					£	s. d.
		16	7	—say 17ft., use and waste		
		—		of fir, 1s. 6d. half	12	9
				Labour at 4d. per ft. cube..	5	8
				31)	1	19 6
				Per foot run..	1	3¼

Or 17s. 7d. per square.

Some estimators uniformly price their hoarding at 10s. per square.

Footway with Post and Rail Fence.—This should be a little longer than the hoarding.

					s.	d.
26	0					
3	0					
—		78	0	1½in. rough boarding and fixing (useless afterwards except for a similar purpose) at 3d.	19	6
26	0					
	6					
	4					
—		4	4	Fir sill.		
2/26	0					
	4					
	3					
—		4	4	Fir plates.		
18/3	0					
	4½					
	3	5	1	Fir bearers.		
—				26 0		
				6/3 0 18 0		
				44 0		
44	0					
	4					
	3					
—		3	8			
		17	5	Fir post and rails, 17ft. 6in. at 1/1; fir 9d., lab. 4d.	19	0
				Hoop iron and spikes.		6
				26)1	19	0
				Per foot run	1	6

Some builders add no profit to cost of hoarding, and the dealing with the material as use and waste disposes of that consideration. When there is no stipulation in the contract against advertising, the hoarding may be let to an advertising contractor. The price per foot superficial varies with the locality, ranging between 1d. and 7d. On some of the larger building estates it is especially prohibited by the freeholder, and often the building owner prevents it by the terms of the contract. Since the passing of the Advertising Stations Rating Act, 1889, many of the vestries and district boards have prohibited advertising on hoardings; others charge a fee of so much per superficial foot of hoarding. Sometimes the advertisement contractor will include in his offer for the advertising privileges the erection and removal of hoarding. It is, however, in many respects, preferable that the builder do it himself. In cases of one builder doing the work of the basement, and another the superstructure, the first builder would erect the hoarding and leave it for the second, in which case the use and waste principle would not apply, and the whole value would be charged.

FAN.

					s.	d.
37	0					
3	9					
—		138	9	Boarding as before.		
2/4	9					
	16					
—		4	9	Cutting.		
					s.	d.
		143	6	Say 1½ sqrs. at 14s. 6d., one half, as before ..	10	11
12/4	6					
	4					
	3					
—		4	6	Fir in struts and stays.		
12'4	0					
	4					
	3	4	0			
—		8	6	8½ft. at 1s. 1d., as before	9	3
				37)	20	2

About 6½d. per foot run.
Some estimators price habitually at 6d. per foot run.

Shoring, Gantries, &c.—A visit to the building site will be necessary for the valuation of this item. Stock or Blagrove on "Shoring" will show the student what methods of shoring are best. If the site is cleared, and with old buildings on one or both sides, the shoring will probably be already done, and the question must be determined (if not provided by the specification) as to who is to pay for it, and to whom the timber shall belong when removed. When an old building is to be pulled down, sufficient old timber for the purpose is often available, when labour of fixing and removal, and cost of spikes, wedges, and hoop-iron are all that need be considered. If a credit amount has been allowed for the old building, something must be added for use and waste of the old timber. When new timber is involved, its cost must be calculated as use and waste, adding thereto the cost of labour, wedges, spikes, and hoop-iron as before. A common contract price in London for use and waste of shoring, including labour, wedges, spikes, hoop-iron, removal, and profit is 1s. 3d. per foot cube. When, from lack of room to store materials, or from necessity to keep the whole footway open, a gantry is required, it must be designed, the quantity of materials and labour calculated and priced, as recommended for shoring. In the country it will often be necessary to inclose the site of the building and a space around it with a post-and-rail fence, to prevent the men from trespassing on the adjacent land. This must be calculated in a similar way; but this will not be estimated for in the absence of an express stipulation. If, however, there is a condition in the contract to preserve the adjoining property or grounds from danger, contractors should take some precautions of the kind.

(*To be continued.*)

THE ROYAL SCOTTISH ACADEMY'S NEW CHARTER.

THE Royal Scottish Academy has issued another reply to the answers of the architects who have petitioned the Privy Council to be heard in reference to the granting of a new supplementary charter to the Royal Scottish Academy. The Academy denies that it had made unfounded and improper efforts to discredit the architects' petition. The Academy admits that among the petitioners are gentlemen eminent in their profession as architects quite entitled to the name of artists, but repeats its statement that the names of many of the signatories to the petition are unknown as artists. As to the "spontaneity" of the architects' petition, the petitioners say that, as respects Edinburgh signatures, these were mostly solicited by some three or four of the more prominent objectors, and that many signatures were got from gentlemen who did not even read the petition. It is pointed out that the architects refused to confer with the Academy on the subject of their views. In reference to the charge made against it that it had done little for art, the Academy recapitulates what it has been able to do in that respect with the limited funds at its disposal, and pleads that under the new charter the Academy hopes to do more for art, especially in the way of providing for more systematic teaching. With regard to the complaints that the claims of architecture were ignored by the Academy as respected its annual exhibition, the Academy points to the testimony of the architectural profession given in connection with the inquiry concerning the London Royal Academy. The Academy reiterates the statement previously made that it was the architects themselves that had ignored the Academy by their failure to comply with the prerequisites which the existing charter prescribes on the part of candidates for admission—viz., the exhibition of works in the Academy's exhibitions, and the placing of their names on the roll as candidates for election. It specifies several gentlemen whose names were on the architects' petition that were in this category. Mr. M'Lachlan applied for admission in 1883, but was not a qualified candidate, inasmuch as he had not, up to that time, contributed to the exhibition, and that gentleman had not renewed his application. Mr. Honeyman, Glasgow, had exhibited, but had never applied for membership. It had been said that eminent architects—such as Mr. Thomas Hamilton and Mr. W. H. Playfair—were at one time members of the Academy, but that such men did not now care for or seek its diploma. "This implies that in the opinion of the petitioning architects or of the committees who represent them, those gentlemen of their number who have applied—viz., Messrs. MacGibbon, Anderson, Blanc, and M'Lachlan—are not in the same class of architects as Mr. Hamilton and Mr. Playfair. Of this the Academy expresses no opinion. Free right to confer membership on architects as well as painters or sculptors is one of the important amendments sought in the amended charter, and yet a section of architects think fit to oppose the Academy's obtaining its new charter."

THE AUCTIONEERS' INSTITUTE.

A SPECIAL council meeting was held at the offices of the institute in London on Friday last, and was attended by representatives from Bangor, Bradford, Cambridge, Chesterfield, Cowes, Farnborough, Gravesend, Keighley, Liverpool, London, Northwich, Southampton, Wakefield, and Worcester. Mr. George Brinsley, of 30 and 31, New Bridge-street, E.C., and who has been a member of the council for several years, was unanimously elected president; the vice-presidents, Messrs. B. M. Bradbeer, J. Catling, F. Everill, and W. Weatherhead, were re-elected, and twelve new applicants were admitted to membership.

CHIPS.

The Cardiff School Board have purchased a site for a new school offered by Mr. J. P. Jones in Rutland-street for the sum of £1,800, which included sewer and road formation, and upon the condition that he be appointed architect. Accommodation is to be provided for not less than 1,200 children.

In connection with the renovation of the Wesleyan chapel, Acock's Green, an oak pulpit has just been added, which greatly improves the interior effect. The pulpit, octagonal in plan, stands on a plain, well-moulded base, which is corbelled outwards at the top to carry the body of the pulpit. The top part is enriched with graceful and varied tracery set in framing having a flat ogee head. This is surmounted by a deep moulded capping which finishes it off at the top. The architects were Messrs. Croucher and Butler, of Birmingham; and the work was intrusted to Messrs. Jones and Willis, of the same city.

At St. John's the Evangelist Church, at Putney, sedilia and arcading to the north and south sides of the sanctuary have just been completed from the designs of Messrs. Lee Bros. and Pain, architects. The work has been executed in alabaster by Messrs. Adamson and Sons, builders, of Putney.

Stained glass has been introduced into the east window of the German church in Bradford to the memory of members of the Delius family. The principal subject is the Ascension of Our Lord. It is from the studio of Messrs. Powell Brothers, of Leeds.

A bust of the late Timothy Falvey, of Southampton, has been executed in white Carrara marble for a memorial committee by Mr. J. Milo Griffith, R.C.A., of London, and will be placed in the Hartley Institute at Southampton.

A tribute of admiration has just been paid to the memory of the late Dinah Maria Mulock (Mrs. Craik), who wrote "John Halifax, Gentleman," in the form of a marble medallion, executed by Mr. H. H. Armstead, R.A., and placed in Tewkesbury Abbey. The framework and treatment are Corinthian in character. Tewkesbury was the place selected by Mrs. Craik as the home of John Halifax, and it was also the last place visited by her before her death.

Building Intelligence.

BRISTOL.—Special services were held at the Mayor's Chapel, College Green, in commemoration of the completion of the work of restoration and refitting which has been in progress for the past two years under the direction of Mr. John L. Pearson, R.A. We illustrated the front of the chapel, which is also known as St. Mark's Church, in our issue of March 18, 1881, and described the general works of restoration, then just brought to completion, in the BUILDING NEWS for Oct. 18, 1889. The works carried out since the latter date have included the cleaning of thick coats of paint, by means of a chemical solvent, off the rich canopies, arches, and tabernacle work in the chancel. The new stone and wood-carving was executed by Messrs. Davey and Bushell, of Bristol. The window of the newly-erected north transept, designed by Mr. Pearson, which is 24ft. in height and 14ft. in breadth, was last year occupied by cathedral glass, but has now been refilled with stained glass of the late 13th-century character, illustrating the life, work, and associations of St. Mark; stained glass has also been placed in the reopened nave window which adjoins this transept, the subject being the Ascension. Both were carried out by Mr. Edwin Howard, of Frome. Stained glass, containing the arms of mayors of the city from 1870 to the present time, has been placed in the north and south chancel windows. A new organ has been built by Messrs. Vowles, of Bristol, and a new lectern and communion, both of polished brass, and the work of Messrs. Singer, of Frome, have been added to the church furniture.

LONDON.—The foundation stone has lately been laid, by Lady Wimborne, of a new mission church and hall in Canterbury-road, S.E., for Corpus Christi College (Cambridge) Mission. The building is on two floors, the lower floor being devoted to a large hall, capable of seating 500 people, with a platform at one end and kitchen, &c., behind. The church is on the first floor, and has chancel, sanctuary, &c., and seats about 500. It is approached by two separate entrances from the street, and has two wide stone staircases. The floors are all fireproof, of Messrs. Homan and Rodgers' construction. The architect is Mr. Richard J. Lovell, 46, Queen Victoria-street, and the builder Mr. B. E. Nightingale. The same architect has also recently completed a similar building in connection with Magdalene College, Oxford. This is in Old Nichol-street, Shoreditch. It was, however, consecrated by the Bishop of London some few weeks ago, and now forms the parish church of Holy Trinity, Bethnal-green. The building has three floors, and has a gymnasium on the basement, large hall on the ground floor, vicar's room on a mezzanine floor, and the church on first floor. It is the first instance of a consecrated church being on the first floor of an otherwise secular building. The church has a separate entrance, and is approached from the street by a wide stone staircase. All the floors are fireproof construction, on Messrs. Homan and Rodgers' system. The cost of the windows has been about £600. The chancel has marble steps and platforms, and is laid with mosaic.

LONDON COUNTY COUNCIL.—Two great metropolitan improvements—New Battersea Bridge and the street between Holborn Town Hall and Farringdon-road—were inaugurated by Lord Rosebery on Monday. We described the bridge, which replaces a rickety timber structure erected in 1766, in our issue of the 13th ult. (p. 827, last Vol.), and need only repeat that it crosses the river on five segmental arches, consisting of cast-iron ribs resting on granite piers, the central span being 163ft. The design was prepared by Sir Joseph Bazalgette, and it has been carried out under the supervision of his son, Mr. Edward Bazalgette, by Messrs. Williams, Son, and Wallington, who took the contract at £143,000. The footways are paved with Claridge's patent asphalte, with which material the approach spandrils have also been filled in, and nothing could be cleaner or more suitable for the flooring of an iron bridge. The Rosebery-avenue, the new thoroughfare running from the Holborn Town Hall to Farringdon-road, is the first section of the projected line to the Angel at Islington. By means of a viaduct it is carried over Laystall-street and Warner-street. It is 60ft. wide, and is a great improvement on the dangerous "dip" between Mount Pleasant and Clerkenwell. The delay in the opening of the entire avenue arises from the County Council having to provide dwellings for the six or seven hundred poor persons who are displaced by carrying out of the improvement.

STRATFORD-ON-AVON.—In connection with the restoration work now in progress in the chancel of "Shakespeare's Church," the first of two stained-glass windows was put in on Friday, next the American window, which is near the poet's tomb. The two windows will cost £500, and have been given by the late Miss Bromley, of Stratford. The one just inserted is on the north side, and represents the Seven Acts of Mercy performed by women as recorded in the Old Testament. The second window, which will be exactly opposite on the south side, will depict scenes from the New Testament illustrative of the Eight Beatitudes. Another stained-glass window is to be put in to the memory of the late Mr. Halliwell-Phillips. It will be placed contiguous to Shakespeare's monument. In other parts of the chancel interior the restoration is being pushed forward, and the work will be completed in about two months. The old miserere seats with the grotesque carvings are being repaired. Beneath the old stalls a curious discovery has been made. Supporting them was found the carved and moulded stone which formed the old reredos of the present chancel, which was rebuilt about 1460. The architects (Messrs. Bodley and Garner) believe that they will be able to set up the reredos in its original position. The chancel walls have been cleansed from whitewash and plaster, and some beautifully coloured work has been found about the richly-carved niches at the east end. Unfortunately, a good deal of the Gothic carvings over the doorways have been mutilated in past ages, but no attempt will be made to reinstate them. A 17th-century candelabrum, which was removed about fifty years ago, is to be put together and hung in one of the transepts.

CHIPS.

A Local Government inquiry was held on Friday, the 11th inst., at the Board schools in Evington, before Colonel John Ord Hasted, R.E., in reference to an application made by the Billesdon Union Rural Sanitary Authority for sanction to borrow the sum of £2,500 for works of private street improvement. Mr. William F. Ault, surveyor to the Board, produced plans and gave evidence in support of the application. There was no opposition. The same authority have also recently received sanction to borrow £4,937 for private street improvement in the New Humberstone district, from plans, &c., prepared by the surveyor.

It is announced in Tuesday's *Gazette* that a receiving order has been granted in the case of Herbert Bignold, of Clapham Common-gardens, London, architect; and an adjudication in the case of Frederick George Helmore, of Grafton-street, Middlesex, late of Marlborough-road, West Brook-green, and Paternoster-row, City, surveyor.

The county council of Somerset have accepted the tender of Mr. G. H. Pollard, of Taunton, at £1,580, for the erection of a police-station at Wellington, in accordance with plans prepared by the county surveyor, Mr. C. E. Norman, of Taunton.

On Saturday the Right Hon. Osborne Morgan, M.P., laid the foundation-stone of the new Town Hall and Liberal Club at Bedminster, Bristol. The hall is to face Canon-street, and will be arranged to seat about 1,500 persons. Mr. Wills, of Bristol, is the architect.

The Forest Church at Guernsey is to be reseated and restored in accordance with plans prepared by Messrs. Freeman and Robins, of Granger-street, Newcastle-on-Tyne.

Mr. Christopher Wren Savage, formerly and for many years architect to the Poor Law Board and the Local Government Board, died at his residence, Roseleigh-avenue, Highbury, on Monday, at an advanced age.

The City Council of Gloucester, at their last meeting, raised the salary of Mr. R. Read, the city surveyor, from £500 to £600 a year, out of which he is to continue to provide such assistance as shall insure the efficient discharge of his duties.

The Unopposed Bill Committee of the House of Lords on Tuesday passed the Westminster (Parliament-street) Improvement Bill, which has already been sanctioned by the House of Commons, granting an extension of time for carrying out the Parliament-street widening and other improvements in the neighbourhood of Westminster, sanctioned by Parliament in 1887.

Engineering Notes.

EDINGTON AND BRIDGWATER RAILWAY.—The formal opening of the new line of railway from Bridgwater and Edington, on the Somerset and Dorset line of railway, thus placing the town and port of Bridgwater in direct communication with the Midland and South-Western systems, took place on Friday. The contractors for the line have been Messrs. Cutbill, Son, and De Lungo (represented in Bridgwater by Messrs. Buxton and Son). The capital sought for by the promoters was £135,000. The main line is $7\frac{1}{4}$ miles in length, but with the sidings for the wharves, constructed in connection with the line on the eastern side of the Parrett, the total length of permanent way is about ten miles. There are three stations—one at Edington junction of the Somerset and Dorset Railway, another at Cossington (about midway), and the third at Bridgwater. The station at Bridgwater is situate near the junction of the Bath and Bristol roads, at the end of Monmouth-street. Mr. Owen was the engineer.

SOUTHAMPTON.—The new dock will be opened to-morrow (Saturday) by the Queen. The dock is shaped like a mason's trowel, the handle representing the entrance. This form facilitates the berthing of vessels, which can come alongside any part of the dock without the wear and tear of working to which they would be subjected in a quadrangular space. The new structure has cost about £300,000 to build. The dock has a depth of 26ft. at low water in spring tides, and Messrs. Pearson and Sons have been intrusted with its construction. Mr. Giles, M.P. for Southampton, has acted as the dock engineer, and his son, Mr. G. F. L. Giles, C.E., has superintended the carrying out of the work. The completion of the dock has been considerably delayed by the serious disasters, first to the north and then to the east walls, owing to the giving way of the foundations, and to make good the damage thus caused, an extra outlay of £50,000 has been necessary.

The Earl of Rosebery unveiled on the 17th inst., in the Crypt of St. Paul's Cathedral, a memorial to the Right Hon. W. Bede Dalley, Chief Secretary in the Ministry of New South Wales in 1884. The monument was designed by Mr. F. C. Penrose, the surveyor to the Cathedral, and the execution of the design and the medallion portrait was intrusted to Sir E. J. Boehm, R.A. It consists of an octagonal slab of grey marble, with a circular recess, surrounded by mouldings, in which are shown in strong relief, in white Carrara marble, the head and shoulders of the Australian statesman. The whole rests upon a rectangular tablet of the same grey marble, bearing in gold letters an inscription.

An inquest as to the death of George S. Butterfield, an operative painter, who died in Westminster Hospital on Monday week, was concluded by Mr. Barnes on Saturday. T. Wilder, of Palmer-street, Gravesend, deposed that he was the subcontractor for painting the extension of Queen Anne's Mansions, and deceased, a journeyman, put up the scaffolding. Deceased had no business inside the lift shaft. During the earlier part of the previous Friday witness had noticed deceased on the plank, and ordered him off. Fredk. Brown, architect and surveyor to Lucas Brothers, contractors for the Queen Anne's Mansions extension, said the board whereon deceased was supposed to have been working at the time of the accident had no support. It was fastened by some 6in. nails, and had been cut to fix and fit into the guide rails of the hydraulic passenger lift. The depth of the shaft from the tenth floor was 139ft. 2in. Henry Walker, labourer, was working at the bottom of the lift, and saw Butterfield fall from the top. Richard Lewis, the foreman to Wilder, said he had to see that the scaffolding was supplied to the workmen. There was no scaffolding to be erected in the lift. If there had been, witness would have done it himself, and would have tried it before he trusted workmen on it. Deceased must have got inside the lift to paint the sill—a thing that he had no business to do. James Boughton, foreman-in-chief to Messrs. Lucas Brothers, and superintendent at Queen Anne's Mansions on their behalf, could not account for the accident except that deceased went on the plank contrary to instructions. The jury returned the following verdict:—"We have come to the conclusion that it was an accidental death, but it has been brought about by the gross negligence of the subcontractor and his foreman, in not seeing that proper scaffolding was erected." As a rider, it was added: "And they feel they cannot rely on the evidence given by the sub-contractor and his foreman."

COMPETITIONS.

HALIFAX INFIRMARY.—Plans for this infirmary were invited from five firms of architects, two of which were local. The competitors were Messrs. Young and Hall, London; Messrs. Milnes and Murgatroyd, Manchester; Messrs. Worthington and Elgood, Manchester; Messrs. Horsfall and Williams, Halifax; and Messrs. Utley and Gray, Halifax. The plans are being exhibited in the rooms lately used as a Free Library, adjoining the present infirmary. The site is in Free School-lane, near Heath Grammar School, and is about 13 acres in extent, with a slope slightly to the east. Four of the plans show the pavilions or wards branching from a straight corridor, crossing the site from east to west, and the remaining set of plans shows a curved corridor. The assessor is Mr. Alfred Waterhouse, R.A., who, after a day's examination, chose those of Messrs. Worthington and Elgood, of Manchester, the estimate being £59,510, which were adopted. The plans placed second in point of merit were those of Messrs. Horsfall and Williams, Halifax, the estimate being £78,000. The plans will be submitted to the executive and general committee after modification.

PARLIAMENT BUILDINGS AT BUCHAREST.—It is announced from Bucharest that the Roumanian Government have determined to proceed at once with the project of a new Parliament House for the Roumanian Legislature. An international competition has accordingly been opened for the new edifice, which is to comprise two portions, one for the Senate and the other for the Elected Chamber. The competition is open to foreign as well as to native architects, and the plans are to be sent either to the General Secretary of the Roumanian Cabinet at Bucharest or to any of the Roumanian Legations, where further particulars of the competition may be obtained. For the three best designs prizes are offered of £600, £280, and £120 respectively.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

BRISTOL AND GLOUCESTERSHIRE ARCHÆOLOGICAL SOCIETY.—The annual meeting of this society is being held in Bristol this week, having commenced on Tuesday and terminating to-day (Friday). On the first day the mayor and the local committee received the society at the Council House, and the opening meeting was held. The report of the council for the past year was read, and the officers and members of council for the ensuing year were elected. The retiring president, Mr. Agg-Gardner, M.P., then introduced the new president, Dr. Beddoe, who delivered an address. Subsequently there was a visit to the Mayor's Chapel, under the guidance of Mr. W. R. Barker. The Cathedral was also visited, and the day's proceedings concluded with a conversazione at the Fine Arts Academy. On Wednesday morning the members assembled at the Academy, where addresses were delivered by Mr. John Latimer and Mr. John Taylor, the former on "Civic Bristol," and the latter on "Ecclesiastical Bristol." Various places of interest were afterwards visited, and the members were afterwards entertained by the mayor and Dr. and Mrs. Beddoe. The annual dinner of the society was held in the evening at the Royal Hotel, College Green. Yesterday (Thursday) Wells and Glastonbury were visited. The concluding meeting will be held to-day (Friday) at the Council House, followed by visits to St. Mary Redcliff Church, the Hermitage, and Temple Church.

The Berlin Academy of Architecture met on Wednesday week to settle the conditions for plans for the important edifices which it is proposed to erect on the Museum Island in that city. The project emanated from the late Emperor Frederick, who also projected a new cathedral for Berlin. The expenditure on the Museum Island is estimated at fifteen millions of marks (£750,000), to which twenty millions (one million sterling) would have to be added for the proposed new cathedral.

In the list of receiving orders published in Friday's *London Gazette*, the name appears of Walter Horne, of Worthing, surveyor to the local board of health for Worthing.

The new block of artisans' dwellings, to be known as De Walden Buildings, in Henry-street, St. John's Wood, was formally opened on the 17th inst. The block contains 150 rooms, and will accommodate 50 families.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India (viâ Brindisi), £1 10s. 4d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph Advertisement inserted for less than 5s.

SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLI., XLIX., L., LI., LIII., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—B. H. and Co.—F. H. C. and Co.—E. F. and B.—J. and W.—A. P. Co. — Capt. H.—J. S.—W. B. F. Co.

Correspondence.

HARROGATE BATHS, WINTER GARDENS, &c.

To the Editor of the BUILDING NEWS.

SIR,—Allow us as competitors to enter the strongest possible protest against the course pursued in the final competition—viz., the stipulation in amended conditions for the latter, of special features in the sketch-plans submitted by us in the first trial—a course which, we have reason to know, lost to us the position we occupied therein.

On receiving the amended conditions we at once pointed out to the town surveyor the injustice done to us whose plans already met all the new requirements (levels only excepted), and acting upon his suggestion, refrained from seeing the referee, or writing him thereon, at once, but left it for the report upon the final drawings, when we referred thereto as follows:—

EXTRACT FROM REPORT UPON DRAWINGS SENT IN SECOND COMPETITION.

Before entering upon any description of the plans now submitted, the authors wish most respectfully to call attention to a departure in the "Supplementary Instructions" from the conditions of the first competition, which, although doubtless not so intended, may seriously affect our chance of success.

According to the "Instructions" issued for the competition by sketch plans, the usual professional course was to be pursued, the selected competitors being called upon to work out their sketch plans to a larger scale, and, of course, without any knowledge of the arrangement of others sent in; but in the "Supplementary Instructions" no less than seven points are introduced as necessary, the *whole of which were provided by our sketch plans*, in accordance with the committee's suggestion, that competitors might introduce any features likely to "prove an attraction to visitors"; thus our suggestions were all made to work against ourselves by being handed over to our opponents as requirements in the second competition.

The following are the points to which we allude, the numbers being those of the paragraphs in the "Supplementary Instructions."

2. Crane baths to be provided, bouillon-room in connection with the Aixe Massage, and Bertholet in connection with vapour baths (Bertholet by printer's error in our report being put "Berthold").

5. Smoking-room.

7. All w.c.'s to have direct external air and light.

9. Areas to be provided in the interior of the building and readily accessible from the basement.

13. Cloak-rooms, &c., for water-drinkers.

16. Doors of crane-baths wide enough for Bath chairs.

19. All pipes laid where they will be easily accessible.

The whole of these highly important features were set forth in our original plans and printed report therewith, whilst the fact of their being specially requested in the final competition shows they had not been provided by some of the other competitors. Hence we are most seriously handicapped; but, having pointed out this no doubt unintentional difficulty, we have every confidence that the referee, by awarding to us the whole of these points, will prevent the wrong which otherwise we should suffer.

The above quotation from our report speaks for itself; but not only was no notice taken of it, but from a copy before us of the committee's report on the accepted plans, we find the following improvements suggested for adoption, the whole of which were fully worked out in our plans and reports thereon—viz., a porch for carriages bringing invalids, Bertholet and vapour baths in the same room and of proper size, additional Aixe douche, needle and shower-baths to be provided, well baths for each sex, douche apparatus to length baths, kitchens for attendants, and room for thermal apparatus for pump-room. Steps at principal entrance are also to be rearranged; as to which we will only point out that as against the large number required by the accepted plan, the baths being specially designed for use of invalids, we secured the approach by only one step, and a slight easy slope on both our plans, which are still in the hands of the committee.—We are, &c.,

C. O. ELLISON AND SON.

62, Dale-street, Liverpool.

BERMONDSEY PUBLIC LIBRARY COMPETITION.

SIR,—The above competition has been decided, the commissioners and their assessor having carefully gone through and examined (?) about 60 sets of drawings, and given their award in *a week*. The result is that the commissioners have added themselves to the long list of those who have done their best to prove that competitions are, as a rule, a delusion and a snare. The selected plan shows a sublime disregard to the instructions that were issued to architects, and it seems a great pity that the commissioners, if they did not intend that the instructions should be followed, did not say so.

Special attention was drawn to the fact that there was "no right to open windows overlooking any of the adjoining windows," yet the plan which is placed first coolly ignores this, and places windows on all sides directly looking on to and into the adjoining properties.

Had he followed the instructions and kept to the same plan, his motto, instead of being "Light," would have been "Gross Darkness." His design, too, could never have been carried out for the stipulated sum, £5,000.

It would be also interesting to know how he would arrange about the "ancient lights"; because if his design be carried out, the last state of those lights would be worse than the first.

I have been able, too, to obtain a little information as to how the award was arrived at. The commissioners met, and such was those gentlemen's grasp of the subject, that in a few hours' out of about 60 sets they selected eight. These in their turn were passed on to the assessor, Mr. Elkington, the surveyor to the parish, who, I presume, reported on them then before the designs were *publicly* exhibited; the commissioner wrote to the author of the design with the motto "Light," and had an interview with him, with the result that his design was adopted *after* he had agreed to several alterations, and after having an opportunity of going through the whole of the other designs. This, I think, you will agree with me, is hardly the right way of settling the matter, inasmuch as there were plans infinitely superior in every way to the ones selected.—I am, &c.,

X. Y. Z.

THE WEST HARTLEPOOL BREWERY COMPETITION.—WHAT *IS* THE GOOD OF THE INSTITUTE?

SIR,—I regret very much the fact of having brought this matter before the Council of the Institute, as their reply is most disappointing; and although they do not actually approve of the

manner in which this competition has been conducted, they do not express any disapproval, or give any expression of opinion one way or the other. This reply, or the wording of the same, has placed me in such a position that my hands are tied with regard to proceeding further in it.

Having given an undertaking to the Institute to forbear entering into competition where an assessor is not appointed, it is surely only natural to suppose that a certain amount of protection will be afforded by the Council to the members of the Institute when anything unsatisfactory takes place in a competition where an assessor is said to have been appointed?

Thanking you for the amount of trouble you have already taken,—I am, &c.,

WILLIAM H. DUFFIELD.

2, King-street, Cheapside, E.C., July 19.

OLD CHURCH FRESCOES.

SIR,—As many of your readers have been interested in the restoration of old churches, I, and doubtless many of your readers, would be glad if they would give us the benefit of their experience of the best mode of procedure to remove the superincumbent coats of plaster and whitewash without injuring any frescoes underneath, and also state if there is any preparation to preserve them from fading away afterwards, through exposure to sun and light.

My experience in church restorations confirms my belief that most of our old churches should have their walls aglow with colour, instead of the "restored" bare aspect they now wear, and that through want of knowledge and proper care many links of the past are lost for ever.

The fine church of Ewelme, near Wallingford, is an instance of its walls bearing indications of many a fresco under the coats of whitewash, and the interesting frescoes around the chancel of Chalgrove Church, close by, are fast fading away on the north side (where the Life of Our Lord is depicted), from exposure to the sun; while those on the south side (illustrative of the Life of the Virgin) are almost as clear as when uncovered in 1883.—I am, &c., A. MARDON MOWBRAY.

48, Iffley-road, Oxford, July 19.

Intercommunication.

REPLIES.

[10317.]—**Excavation.**—If "Student" deducts the cubical space occupied by the sewer, he will not be far wrong, as the earth filled in should be well rammed and consolidated.—H. L.

[10319.]—**Architect's Designs.**—I am afraid that "A. R." has no remedy, although he evidently does not feel flattered, as he might do. Some of the greatest architects have their works imitated, with more or less success, by members of their own profession.—H. L.

[10318.]—**Specifications.**—The standard work on this subject is that by the late Professor Donaldson. Some years since (1872), Mr. F. Rogers published a new edition of "Bartholomew's Specifications," which included many modern works; and I think that another edition has been issued more recently. Several specifications have been given in the BUILDING NEWS in "Practical Architecture." At the present day, specifications are hurriedly written. "Inquirer" should practise by writing from a well-detailed set of drawings.—H. LOVEGROVE.

A majority of the Improvement Committee of the Southport Corporation have approved a scheme for developing the north foreshore on the lines laid down by a plebiscite. A duplication of the existing marine park and lake is provided for. The north promenade will be widened and a carriage-way provided to the sands; but the setting back of the pier entrance is not included. The proposed new lake covers 25½ acres. It is intended to borrow £25,000 to carry out the scheme.

A church to seat 250 persons is being built at Beaufort, Mon., for the Rev. D. J. Llewellyn. The contract, which includes furniture and heating, has been taken by Mr. John Haines, of Cardiff, for £970, making the cost at per head a little less than £4. The plans have been prepared by Messrs. Halliday and Anderson, of Cardiff and Llandaff. A mission-room to seat 150 persons has recently been opened by the Lord Bishop of Llandaff at Cymmer, near Bridgend. The designs were by the same architects.

Arrangements are in active progress for the holding of the third Annual Art Congress at Birmingham in November next. The meetings will be held in the Town Hall, the Mason College, and the lecture theatre of the Midland Institute, and will be opened by the President's address on November 4th.

LEGAL INTELLIGENCE.

IN RE J. E. EDWARDS.—Mr. Registrar Hazlitt heard on Friday an application by John Edward Edwards for an order of discharge. He had traded as a builder in Campbell-road, Bow, and his statement of affairs showed liabilities to the amount of £2,105, and the Official Receiver certified that the assets had realised £83. The debtor commenced business as a speculative builder in 1886, with a capital of £80, and in 1888 he became bankrupt, with liabilities £2,695, on which a dividend of 3s. 2d. in the pound was declared. He received his discharge in November, 1888, and in the following month he resumed business. He attributed his failure and the deficiency upon his trading mainly to his inability to realise houses which he had erected at West Hampstead, and to the stoppage of advances on other hourses in course of construction. His Honour said that the debtor, after a recent failure, rushed again into speculative building. He was not a fit person to pose as a trader, and his order of discharge would be suspended for three years.

IMPORTANT EMPLOYERS' LIABILITY CASE.—On Monday last his Honour, Judge Prentice and a jury heard, at the Shoreditch County Court, the case of "Luther v. Patman and Fotheringham." It was an action brought by Thomas Luther, of Shaftesbury-street, Hoxton, to recover damages, under the Employers' Liability Act, for personal injuries alleged to have been received through the negligence of the defendants' servants.—Mr. J. Morten was counsel for the plaintiff, and Mr. Ruegg appeared for the defendants.—The plaintiff's case was that on the 24th of September last he was at work as a bricklayer for the defendants upon some buildings at Charing-cross. A scaffold had been erected, and he was at work upon it. There was an open window hole near the spot where he was standing, and his foot slipped and he fell through the hole, which was between 6ft. and 7ft. long, and between 2ft. and 3ft. wide. He fell on to his back, which was injured. He was taken home and afterward removed to a hospital. He was for seventeen weeks without work, and he now found that his back still pained him; he was unable to do the work so well, and with such facility as before the accident. Evidence was given by Henry Hadby, a scaffolder on the job, that when the bricklayers were sent up to work the scaffold was not finished, and witness said, at the time: "Give us time to finish it." He took the plaintiff to the hospital, and when he returned he found that the hole had been covered. Another witness named Ayling, who was also at work, said it was usual to cover up such openings like the one the plaintiff fell through, and he made the remark to Donoghue, the foreman scaffolder, that there should have been a short board across the hole. John Bowers, a general labourer, said that after the accident Donoghue, the foreman scaffolder, said: "Well, what can you expect? They don't allow us time to get the scaffold up properly before they set the bricklayers on it." After Donoghue had gone, Mr. Adams, the general foreman, came up and said, referring to the hole, "Why was it not boarded over?" Mr. Adams said that to Beazley the foreman bricklayer.—Mr. Ruegg severely cross-examined this witness, but he persisted in his statements. A great deal of evidence was then given for the plaintiff to show that it was the custom of the trade to cover such spaces. Mr. Ruegg then called Mr. Chaunley for the defence. The witness stated that he was manager to the defendants. He remembered the plaintiff calling on him shortly after the accident, and asking him for some assistance. The plaintiff stated that he did not blame anybody for the accident. He (witness) was a practical man, and it was not the custom of the trade to cover such places, except for the purpose of running materials away. He had never had any complaints from the men as to any danger, and he had never heard of a case before of a man falling through a window. Samuel Adams said he was the general foreman on the job; it was not his custom to cover with boards such openings. He went on the scaffold after the accident, but it was not true that he said "Why is it not boarded over?" In cross-examination, witness said that he really did not recollect what he did say. His foreman, Saunders, said he had put a few boards over the hole "to keep some other fool from falling down." This remark was greeted with hisses from the public in court. John Beazley said he was the foreman bricklayer. Hadley did not say the scaffold was not finished. The statement that Adams asked witness why the opening was not boarded over was also untrue. It was not the custom to do so. In cross-examination, witness said that they were hurrying on with the work. Adams and witness had no conversation about the matter whilst they were on the scaffold. If it had been necessary, the hole would have been covered up. It would have been a good precaution to cover up the hole. It would have been desirable, but it was not necessary. He did not think a man could fall through unless he stepped from one scaffold to the other—from the outer to the inner. Thomas Donoghue said he erected the scaffold, and did not think it necessary to cover up the opening. The witness contradicted the witness Bowers as to the alleged remark made by him (witness) as to not being allowed sufficient time. The bricklayers were at work on the scaffold whilst his men were erecting it. This remark was greeted with laughter and "Hear hear" from the back of the Court, and in answer to Mr. Ruegg the learned judge said he took no notice of the interruptions, and the jury were too sensible to be affected by them.—For the defence experts were then called to show that it was not the custom of the trade to cover such openings.—In his address to the jury Mr. Ruegg said that if they found a verdict for the plaintiff they would convict every builder in London. He contended that there had been no negligence on the part of the defendants. The affair was simply an unfortunate accident. Mr. Morten having replied upon the whole case, the learned judge summed up.—The jury having retired for about a quarter of an hour, returned into court and announced that they found that there had been negligence on the part of the defendants in not covering up the hole, and they awarded the plaintiff £40 damages. They also found, however, that the plaintiff knew of the risk "he ran," and "voluntarily" accepted it.—Upon this, Mr. Ruegg asked for judgment for the defendants, and his Honour assented. Mr. Morten said he should appeal, on the ground that the learned judge had not explained to the jury the meaning in law of the word "voluntarily."

CHIPS.

The new church of St. Mark, Bush Hill-park, near Enfield, is about to be commenced. The first section, which excludes the south aisle, will cost £3,500, and is being built by Mr. J. Tyerman, of Walworth-road, S.E. Messrs. J. E. K. and J. P. Cutts are the architects.

On Thursday in last week, in the Philharmonic Hall, Southampton, in the presence of the assembled students and members of the committee, Mr. J. C. Peak presented, on behalf of the students (past and present) of the School of Art, committee, and friends, the head master (Mr. S. C. Seaward) with a set of valuable wedding gifts, on the occasion of his approaching marriage.

Mr. A. A. Langley, who for many years has been engineer-in-chief to the Midland Railway Company, has accepted the position of consulting engineer to that company.

Mr. E. Davies has been elected surveyor to the Llangollen District Highway Board, in succession to Mr. Evans, who had obtained the appointment of surveyor to the Carnarvonshire County Council.

Sir Lyon Playfair opened on Saturday afternoon, in Knatchbull-road, Camberwell, a new public library, which has been given to the joint parishes of Lambeth and Camberwell by Mr. Minet, who last year gave the extensive space known as Myatt's Fields, close to the gates of which the new library stands. Mr. Minet has also given to the district a large hall, which has been erected in the same road.

A new patent elevating ferry steamer, which has been designed by Messrs. W. Simons and Co., of Renfrew, was opened at Finnieston, Glasgow, on Friday, by the Clyde Trustees. It is adapted for both passenger and carriage traffic, and is 80ft. by 43ft., and its depth amidships is 12ft. The vessel is subdivided into thirteen watertight compartments by iron bulkheads. The main deck is iron, and beneath it is accommodation for the crew. Its distinctive feature is an elevating deck platform (in addition to the ordinary deck) which extends the whole length of the vessel, and occupies two-thirds of the breadth. Supported by six steel columns of box section, the platform from its lowest position rises to a maximum height of 15ft. by six large steel screws placed inside the upright columns. The ferry is thus able to embark and land passengers on the quay or landing-place irrespective of the rise and fall of the tide. The steamer has accommodation for 300 passengers, besides eight loaded carts and horses, or if passengers only, 600 to 700. Having no chains, the Simons ferry is not confined to one berth, but can move from one point of debarcation to another.

The House of Lords Committee, which has had under consideration this week the Bill for the removal of the gates and bars across certain streets in London, heard on Wednesday the evidence of Mr. A. Binnie, the engineer to the County Council, as to the obstruction to traffic caused by the gates in question. He added that he had never known compensation paid for the removal of such obstructions.

The Devon County Asylum, Exminster, is being warmed and ventilated by means of Shorland's patent Manchester grates, supplied by Mr. E. H. Shorland, of Manchester.

Jean Gautherin, a talented sculptor, repeatedly medallist at the Salon, died on Monday of congestion of the brain at the age of 49. His "Paradise Lost" is a well-known piece of sculpture.

STATUES, MEMORIALS, &c.

LICHFIELD CATHEDRAL.—The memorial erected to commemorate the life and work of the Ven. John Hodgson Iles, late archdeacon of Stafford, was unveiled in this cathedral on Monday by the Bishop of Lichfield. The memorial takes the form of an effigy, which has been placed on the east side of the north transept steps, near the organ, and has been executed by Mr. W. R. Ingram, of London, who some years ago supplied a number of the figures for the west front of the cathedral. The effigy represents the late archdeacon in a recumbent position wearing his official robes, and with his hands crossed over his breast, clasping a copy of the Holy Scriptures. The figure is placed on an altar tomb with Gothic mouldings, the whole being executed in Caen stone, and on the front are three panels bearing the following inscription:—"John Hodgson Iles. Died 1888. Aged 61. Rector of Wolverhampton 1860-1876. Archdeacon of Stafford. Canon Residentiary of the Cathedral. 'Not slothful in business, fervent in spirit, serving the Lord.'"

WATER SUPPLY AND SANITARY MATTERS.

ALVASTON AND BOULTON SEWERAGE.—At a special meeting of the Alvaston local board held on Friday, July 11, it was decided to instruct Mr. W. H. Radford, C.E., of Nottingham, to prepare a scheme for the sewerage of the district. The district to be drained includes a rapidly-increasing suburb of Derby.

CHIPS.

Colonel Ducat, R.E., held an inquiry at Colwin Bay on Tuesday, touching an application from the local board for powers to borrow £5,250 in respect of the construction of a subway to the beach, and £750 for the formation of a footway and promenade. Mr. W. Jones, surveyor to the local board, described the construction of the proposed footways and promenade, adding that the subway under the railway would be constructed by the North Western Railway Company, who had furnished no estimates or plans, but had undertaken to do the work themselves for a lump charge of £3,500.

Alterations have been made to the Accrington Spinning and Manufacturing Company's mills, embracing the ventilation, the extraction of the vitiated air now being effected by the latest improved form of Messrs. Robert Boyle and Son's self-acting air-pump ventilator.

Mr. John Rhind, of Edinburgh, has just modelled in plaster three panels for the pedestal of the Chambers Memorial Statue, which is to be erected in Chambers-street, Edinburgh, opposite the entrance-door of the Museum of Science and Art. The figures, female in each case, are symbolical of Literature, Liberality, and Perseverance.

The sale of the 176 pictures collected by the late Mr. Charles Wells, of Berrington Lodge, Wolverhampton, realised on Tuesday nearly 11,000 guineas.

A large hall has been added to the Higher Tranmere, Birkenhead, High School for Girls, 35ft. by 26ft., with recessed bay window, which will accommodate about 200 persons; also large room below of same size for cloak and playroom, with extended lavatories, the whole costing about £800. Mr. James N. Crofts, of Liverpool, was the architect; Mr. John Shaw, of Birkenhead, the builder. The concrete and wood-block flooring are by Mr. Lowe, of Farnworth.

The exhibition of the works submitted for the National Art Competition, 1890, by the schools of art throughout the kingdom will be opened to the public on Monday next, the 28th inst., and will remain open until the end of August. The works will be on view in the Enamels Gallery of the South Kensington Museum.

A committee of the Dundee Water Commission have recommended that body that Mr. Watson, the engineer, receive an honorarium of 250 guineas for the extra work imposed on him in preparing Parliamentary plans, &c., for the proposed extension of the waterworks, which is estimated to cost about £50,000. It was arranged that from January next Mr. Watson's salary should be raised from £500 to £600 per annum, this increase to cover the preparation of Parliamentary plans and the execution of new works in the future.

Further additions have recently been made to our knowledge of old Chester by the excavations for cellarage made in Watergate-street by Mr. Charles Brown, formerly mayor of that city. The base of a Roman column was uncovered, and will be left *in situ*, an arch being built over it to preserve it; above this was found a 14th-century stone coffin and carved gravestone.

The Stainland local board have appointed Mr. G. H. Crowther as engineer for the proposed works of water supply from Coldacre, at an inclusive retainer of £500.

Our Office Table.

MR. TATE'S offer of his collection to the nation as the nucleus of a National Gallery of British Art, although looked at askance by the Government, is being warmly and substantially supported by art patrons. Mr. William Agnew, M.P., urges that the site of Kensington Palace is the best one for such an institution, and puts the matter into practical form by offering "not less than £10,000" towards the £100,000 which he considers would be ample to provide a good sculpture gallery, four or five for oil-paintings, and others for water-colours and engravings. Towards the same object Mr. Harry Quilter also promises £2,000. Such gifts will stimulate the liberality of other wealthy connoisseurs, and although we cannot agree with Mr. Agnew in his selection of Kensington Palace as the ideal situation for such a gallery, we trust that Mr. Tate's collection will be secured for the public and worthily housed.

MR. DAVID DAVIES, M.P. for Cardigan District from 1874 to 1885, died on Sunday, aged 72 years. As a railway contractor, he carried out extensive undertakings in South Wales. Between 1851 and 1862, in partnership with the late Thomas Savin, he made the Llanidloes and Newtown line, the Vale of Clwyd line, and the Oswestry and Newtown Railway. After the partnership with Mr. Savin was dissolved, he joined the late Ezra Roberts in making the Pembroke and Tenby Railway, and other lines. Subsequently he threw his whole energies into the development of collieries in South Wales, and became one of the wealthiest men in the Principality. He was the principal promoter of the Barry Docks and Railway, and became vice-chairman of the undertaking, which has proved a great success.

A PUBLIC MEETING was held on Wednesday, under the auspices of the Plumbers' Company, at the Kensington Town-hall, presided over by the Rev. E. Carr Glyn, M.A., with the object of considering measures whereby the technical and scientific education of apprentices and other plumbers may be systematically insured, and the public protected against the action of unqualified plumbers. Sir Algernon Borthwick, M.P., read a report, stating that some of the registration committee had urged that statutory powers be applied for to consolidate and enforce the registration system, and render it penal for persons to falsely represent themselves as registered plumbers; also that investigations be made to determine the suitability of some of the materials and systems used in plumbing work, which could not be undertaken by private individuals. It was suggested that a better system of apprenticeship be adopted, and that apprentices should go through an educational course and present themselves for periodical examinations. He moved the adoption of the report; also a resolution declaring that "the progress of the system affords indisputable evidence of its having satisfied public requirements, and in a marked degree commands the confidence of sanitary and other authorities." Lord Lorne seconded the resolution, which was agreed to. Professor Garnett moved and Professor Hicks seconded—"That effective measures should forthwith be taken for securing a systematic training and instruction of plumbers' apprentices, and education in the branches of science and technology required by persons engaged in works affecting the sanitary condition of dwelling-houses and other buildings in respect of their water supply and drainage, and that the object can only be satisfactorily attained by the combined action of plumbers and technical authorities throughout the kingdom in accordance with the proposal of the Worshipful Company of Plumbers, which is worthy of approval and support." Attention was, by a further resolution, directed to the anomalous circumstances that, while it has long been the practice to require that those dealing with matters affecting the health of the community should possess sufficient training and prove their qualification before undertaking their duties, there is not at present any corresponding safeguard to the public in respect of plumbers.

Mr. Edward Large, formerly Government engineer at Melbourne, died at Boulogne-sur-Mer, France, on Saturday, in his 68th year.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

ANNSCROFT, SHREWSBURY.—For the erection of additional farm-buildings at Stoneyford, for Mr. W. Brown:—
Southern, W. W., Nobold, Shrewsbury, (accepted) £130
(Lowest of three tenders received.)

BOSTON.—For machinery for the new grain warehouse, for the harbour trustees:—
Stott and Co., Manchester (accepted) ... £1,218

BRIXHAM, DEVON.—For alterations and additions to the Bolton Hotel, for Mr. J. Bartlett. Mr. G. S. Bridgman, M.S.A., Torquay and Paignton, architect:—
Hazlewood Bros. (accepted).

CARDIFF.—For the erection of new schools for 290 children, in the parish of St. Mary the Virgin, Cardiff, for the Rev. G. A. Jones, M.A. Mr. F. J. Veall, Arcade Chambers, High-street, Cardiff, architect. Quantities by the architect:—

Lock, F. S.	£1,733	0	0
Allan, J.	1,696	0	0
Gibbon	1,613	0	0
Thomas, W., and Co.	1,597	0	0
Haines, J. (accepted)	1,577	0	0

All of Cardiff.

CANONBURY.—For works and redecoration of Trinity Presbyterian Church, Canonbury, N. Mr. R. Annan, Highbury, N., architect:—

O'Dyly and Co., Ltd.	£362	0	0
Flaxman, G.	243	0	0
Taylor and Son (accepted)	231	0	0
Gasfitter's work:—			
Taylor and Son (accepted)	69	0	0

CHILD'S HILL, MIDDLESEX.—For enlargement of All Saints' Schools. Messrs. Tatham and Flower, 15, Clement's Inn, architects:—

Dove Bros.	£545	0	0
Burford and Son	509	0	0
Lawrence, E., and Son	595	0	0
Parkinson and Son	498	0	0
Scrivener and Co (accepted)... ...	478	0	0

CLERKENWELL, N.—For the erection of a school for 2,006 children on the Hugh Myddleton site, Clerkenwell, for the London School Board. Mr. T. J. Bailey, architect:—

	A.	B.
Patman & Fotheringham	£45,396 ... £46,096	... £45,496
Colls and Sons	44,075 ... 44,766	... 43,956
Killby and Gayford ...	43,820 ... 44,540	... 43,720
Grover, J., and Son ...	43,577 ... 44,267	... 43,567
Lawrance, E., and Sons...	42,534 ... 43,238	... 42,584
Dove Bros....	41,505 ... 42,580	... 42,520
Mowlem, J., and Co. ...	41,448 ... 41,938*	... 40,938
Pattinson, S. and W.† ...	38,312 ... 38,939	... 38,000

* Accepted. † Withdrawn on account of error of omission amounting to £2,188 18s.

A.—If brickwork be built in cement. B.—If brick facing be substituted for terracotta facing.

The provisions included in the tender amount to £2,563 11s. for the main school, £203 for the deaf and dumb centre, and £74 for the blind school.

[(*a*) Cost of school buildings only, £27,603; (*b*) six teachers' rooms for main school, £600; (*c*) blind school and single cookery centre, £1,572; (*d*) one teachers' room for ditto, £100; (*e*) deaf and dumb centre, £3,567; (*f*) two teachers' rooms for ditto, £200; (*g*) tar pavement playgrounds, and drains, £3,150; (*h*) boundary walls and gates, £850; (*i*, *j*, and *k*) extra depth of foundations, £2,836; (*l*) works to existing buildings, £1,270; brickwork in cement (less credit of £300 for old bricks), £490; total, £41,938. Cost per head of (*a*), £13 15s. 2d.; total cost per head, £20 18s. 1d.]

DAWLISH, DEVON.—For erecting eight cottage residences, for Mr. E. R. West. Mr. G. S. Bridgman, M.S.A., Torquay and Paignton, architect:—

Pepperell, W....	£1,915	0	0
Chudleigh, L....	1,879	0	0
Friend, S.	1,804	16	0
Cundy and Stoyles	1,698	10	0
Lamacraft, J. H.	1,684	10	0
Webber, H., Paignton	1,590	0	0
Rabbick and Brown, Paignton ...	1,549	0	0
Hatcher, W. H., Dawlish	1,489	0	0
Westcott, J.	1,440	0	0

(It is intended to accept the lowest.)
Rest of Dawlish.

DALSTON, N.—For the enlargement of the Wilton-road School, Dalston, by 400 places, and also the provision of a cookery centre on the site, for the London School Board:

	A.
Grover, J., and Son	£5,208 ... £5,309
Kellaway, W. L....	4,989 ... 5,086
Lawrance, E., and Sons ...	4,966 ... 5,061
Atherton and Latta	— ... 5,033
Williams, G. S. S., and Son ...	4,908 ... 5,013
Dove Bros.	4,823 ... 4,905
Killby and Gayford	4,722 ... 4,804
Cox, C.	4,660 ... 4,777
Nightingale, B. E.	4,648 ... 4,746
Mowlem, J., and Co.	4,626 ... 4,691*

* Accepted.

A.—If brickwork be built in cement.

[(*a*) Cost of school buildings only, £3,549; (*b*) cookery centre, £526; (*c*) tar pavement and playgrounds, £77; (*d*) two teachers' rooms, £200; (*e*) extra depth of foundations, £274; brickwork in cement, £65; total, £4,691. Cost per head of (*a*), £8 17s. 5d.; total cost per head, £11 14s. 6d.]

EXETER.—For sanitary alterations at 16, Cathedral-yard. Mr. C. Cole, Queen-street Chambers, Exeter, architect:—

Sharland, T. (accepted).
(No competition.)

EXETER.—For sanitary alterations, &c., at the Criterion p.h., for Messrs. Ross and Pidsley. Mr. C. Cole, Queen-street Chambers, Exeter, architect:—

Ham and Pasmore (accepted).

EXETER.—For alterations to business premises, No. 7, Magdalen-road, for Mr. J. J. Norman. Mr. C. Cole, Queen-street Chambers, Exeter, architect:—

Popman, J. (accepted).
(No competition.)

EXETER.—For reinstating and repairing 50 and 51, Sidwell-street, for the Feoffees of St. Kerrian's. Mr. C. Cole, Queen-street Chambers, Exeter, architect:—

Westcott, J. (accepted).
(Lowest of thirteen tenders received.)

EXETER.—For alterations and additions to house, No. 48, Summerland-street. Mr. C. Cole, Queen-street Chambers, Exeter, architect:—

Ham and Pasmore (accepted).
(No competition.)

EXETER.—For sanitary alterations at business premises, 48, High-street. Mr. C. Cole, Queen-street Chambers, Exeter, architect:—

Mason:—Tree and Bolley (accepted).
Plumber:—Willey and Sons (accepted).
(No competition.)

FULHAM, S.W.—For the enlargement of the St. Dunstan's-road School, Fulham, by 400 places, for the London School Board:—

	A.
Colls and Sons	£4,486 ... £4,541
Dove Bros....	4,473 ... 4,535
Killby and Gayford	4,423 ... 4,482
Mowlem, J., and Co.	4,365 ... 4,422
Longley, J., and Co., Crawley, Sussex	4,295 ... 4,414*

* Accepted.

A.—If brickwork be built in cement.

[(*a*) Cost of school buildings only, £4,223; (*b*) tar pavement and playgrounds, £24; (*c*) extra depth of foundations, £38; brickwork built in cement, £119; total, £4,414. Cost per head of (*a*), £10 11s. 7d.; total cost per head, £11 0s. 8d.]

GRIMSBY.—For building new school, for Sister Evangelist of the Convent, Nottingham, Heneage-street, Grimsby. Mr. E. W. Farebrother, F.R.I.B.A., Grimsby, architect:—

Marrows, H. (accepted)	£380	0	0

(Lowest of four tenders.)

GRIMSBY.—For building new braiding rooms, Grimsby, for the Great Grimsby Ice Co., Ltd. Mr. E. W. Farebrother, F.R.I.B.A., Grimsby, architect:—

Kirk, N.	£421	0	0
Hewins and Goodhand	343	0	0
Chapman, J.	338	0	0
Smith, W. H.	334	0	0
Wilkinson, J.	308	19	6
Nightingale and Danby	299	0	0
Siminson, T. (accepted)	293	0	0

All of Grimsby.

GRIMSBY.—For building new Apprentices' Home, Victor-street, for the Great Grimsby Ice Co., Ltd. Mr. E. W. Farebrother, F.R.I.B.A., Grimsby, architect:—

Guy and Gooseman	£4,338	0	0
Walker and Cook	3,778	0	0
Marrows, H.	3,722	0	0
Siminson, T.	3,693	7	8
Hewens and Goodhand	3,681	15	0
Thompson, J. R., & Sons, Louth*	3,575	0	0

* Accepted.

Rest of Grimsby.

GRIMSBY.—For alterations and additions to the offices and works of the *Grimsby News Co.* Mr. E. W. Farebrother, F.R.I.B.A., Grimsby, architect:—

Thompson, J. R., and Sons, Louth	£249	0	0
Walker and Cook, Grimsby... ...	235	0	0
Grey and Gooseman, Grimsby* ...	195	0	0

* Accepted.

GRIMSBY.—For new shop-fronts, for Mr. C. Jeffs, Grimsby. Mr. E. W. Farebrother, F.R.I.B.A., Grimsby, architect:—

Manows, H. (accepted).
(Lowest of four tenders.)

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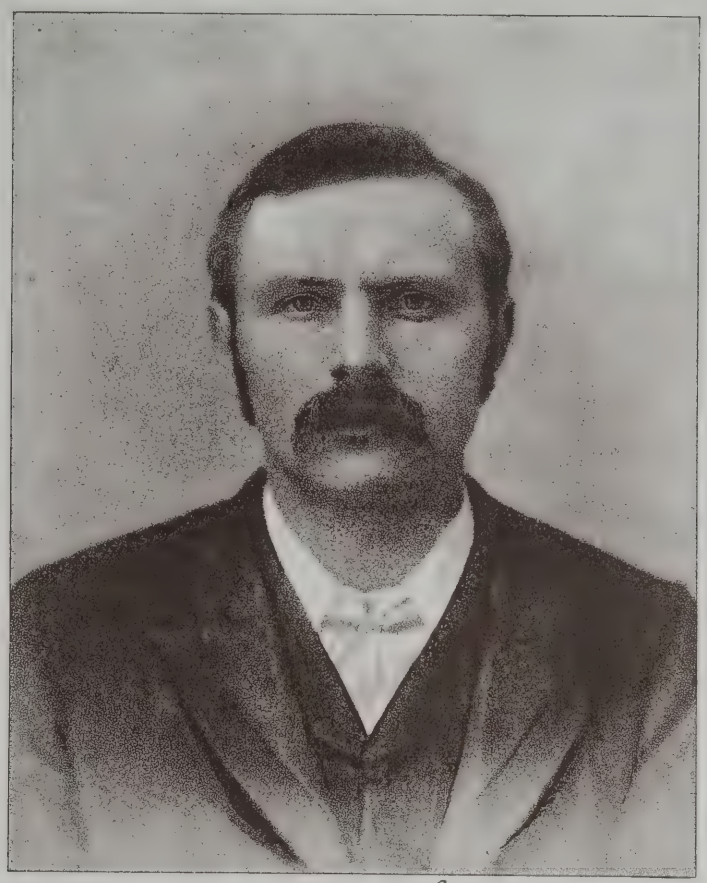


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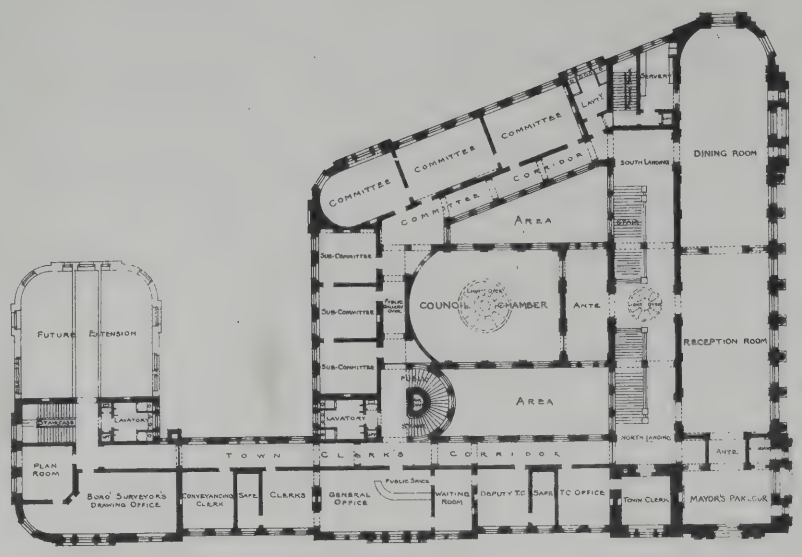


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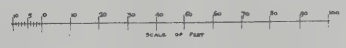
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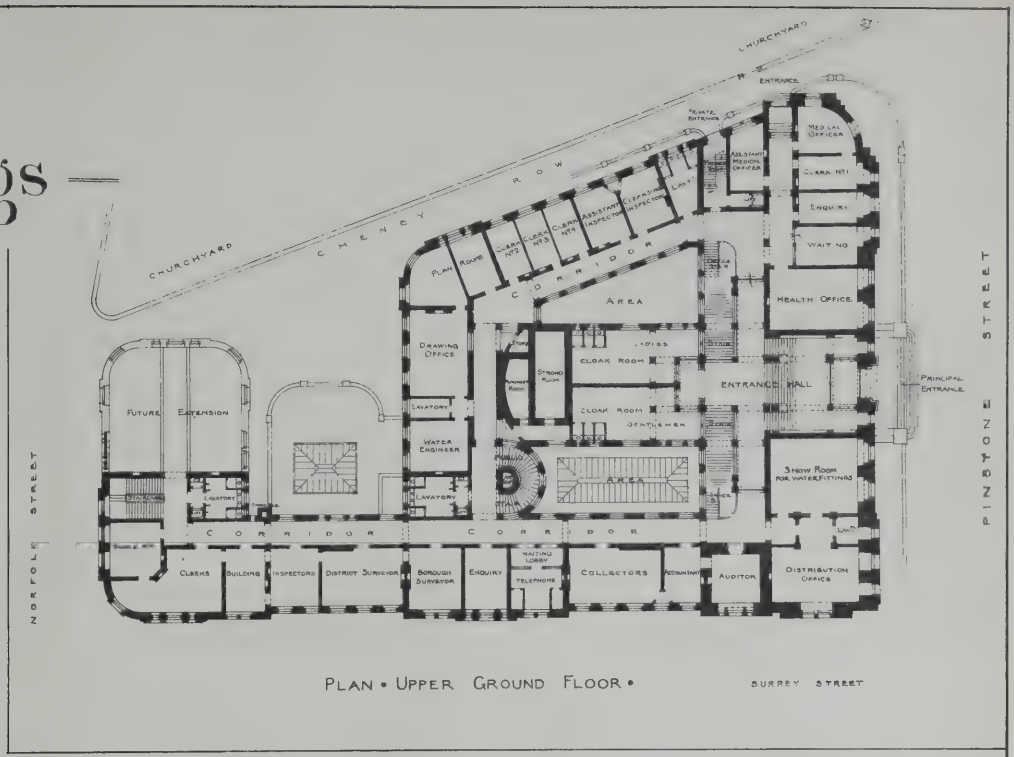


PLAN · FIRST · FLOOR



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SHEFFIELD —
Principal Buildings —



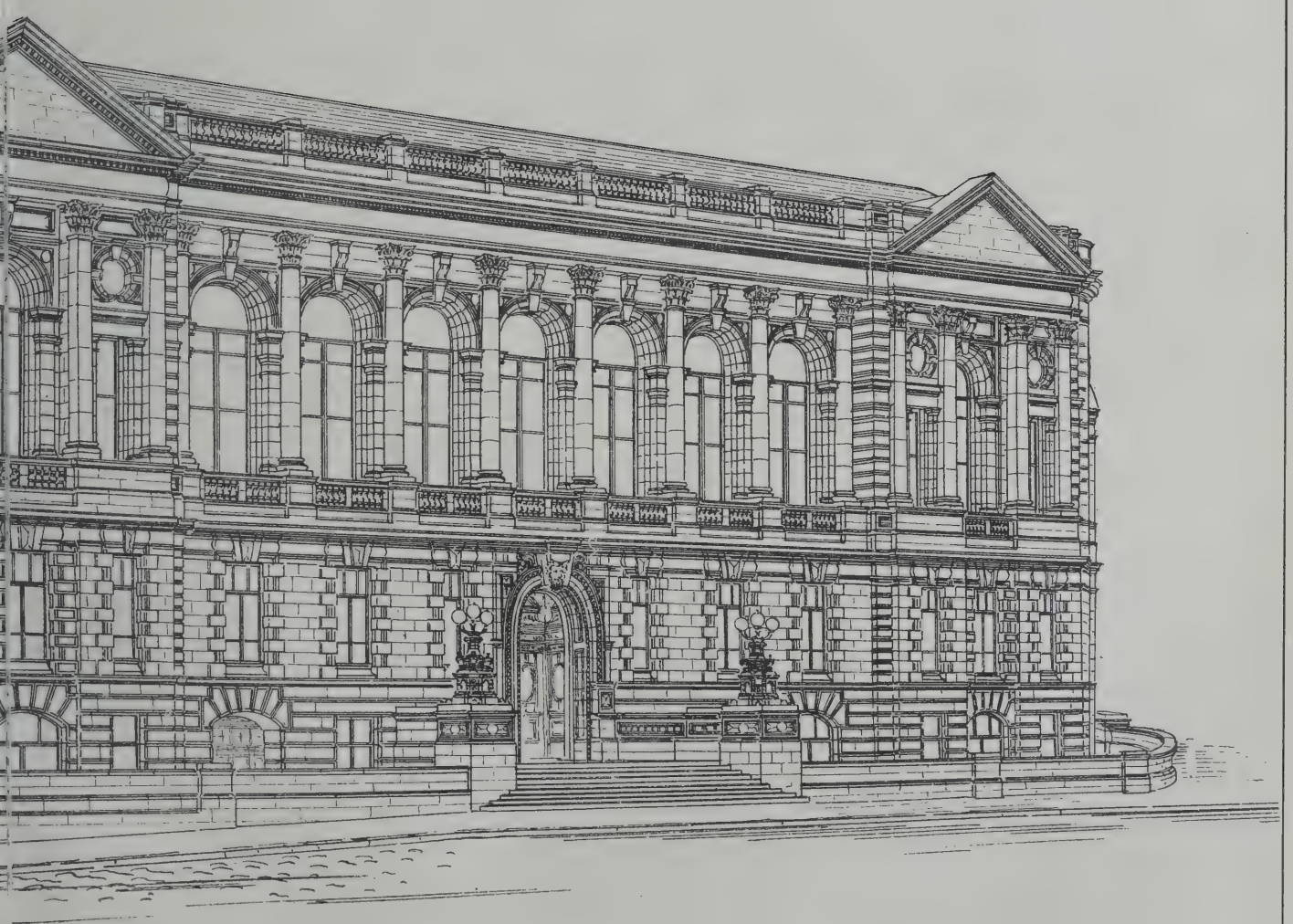
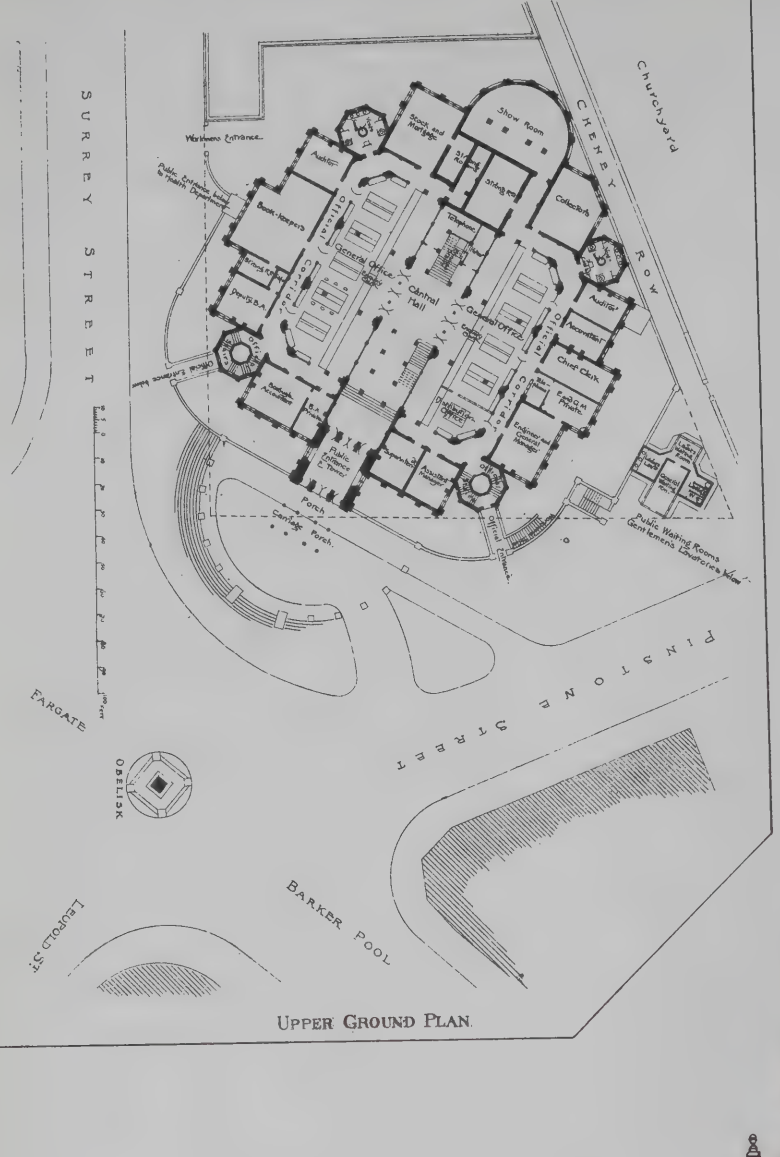
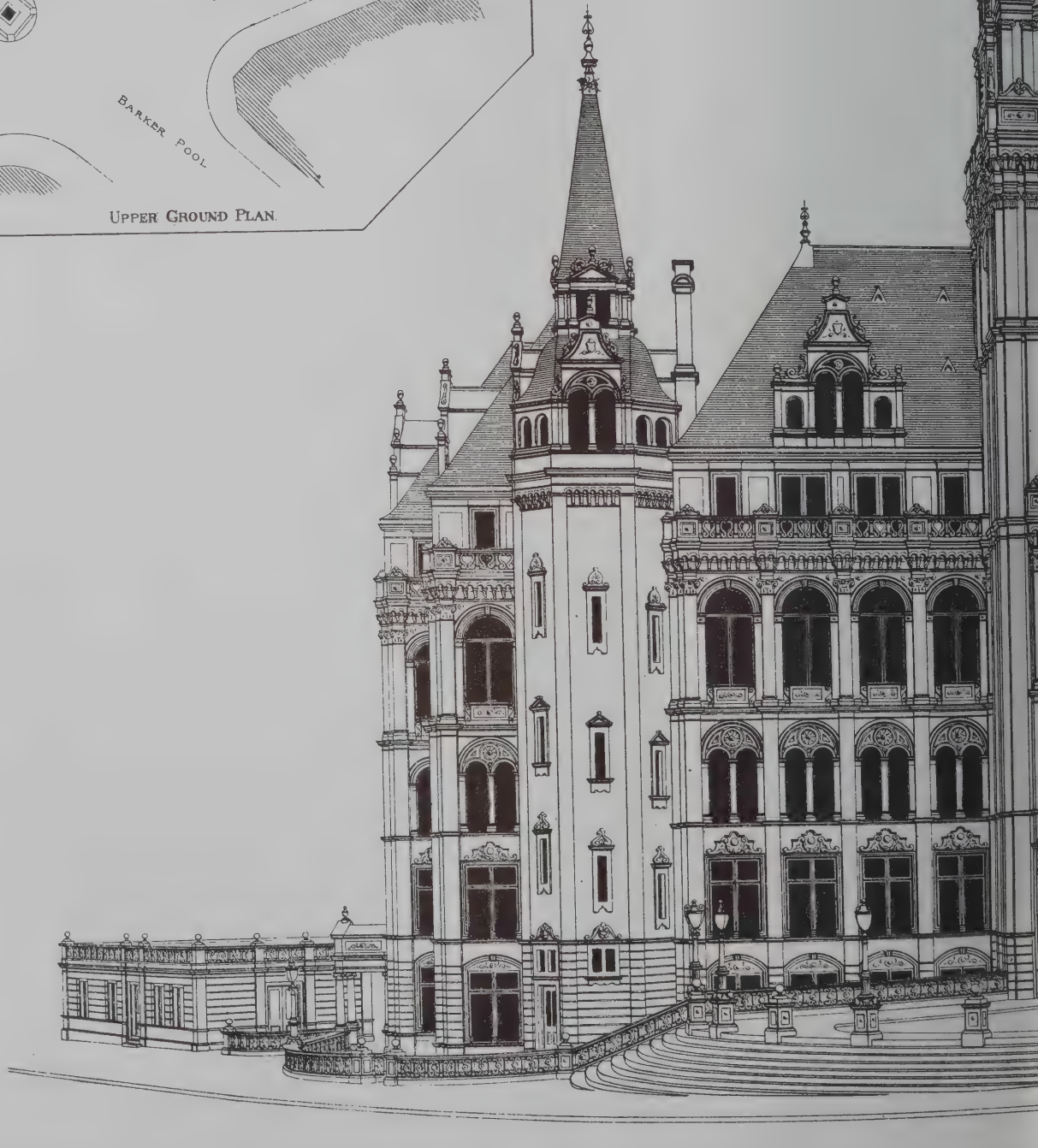


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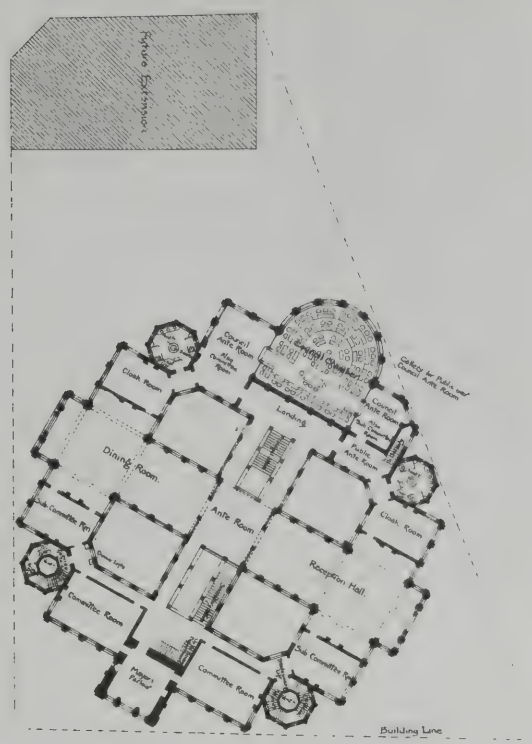


UPPER GROUND PLAN.



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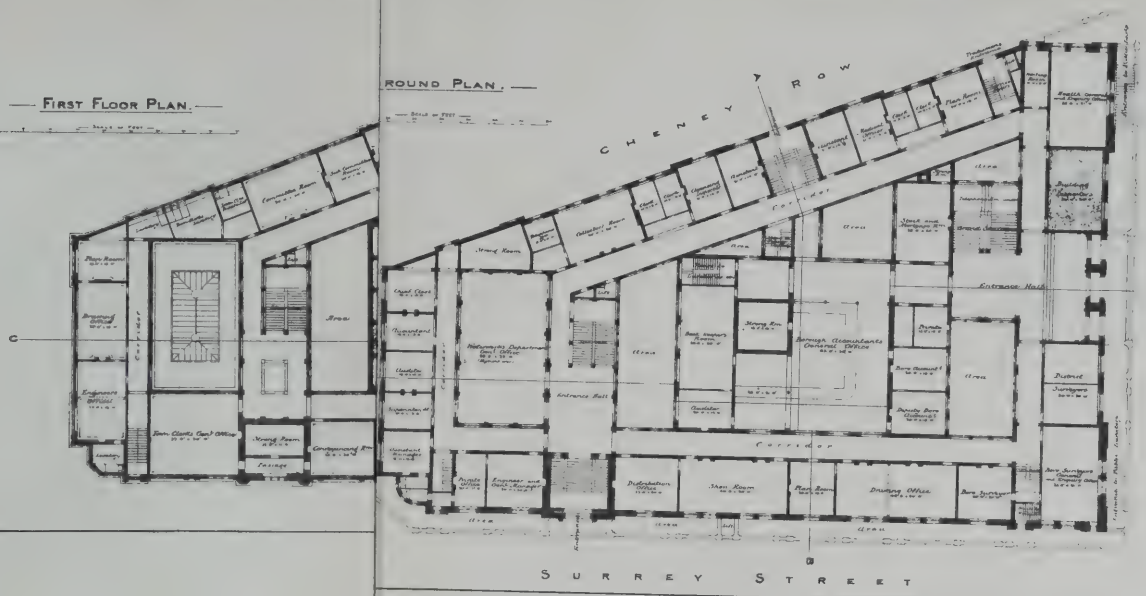
FIRST · FLOOR PLAN

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— First Floor Plan. —

— Ground Plan. —



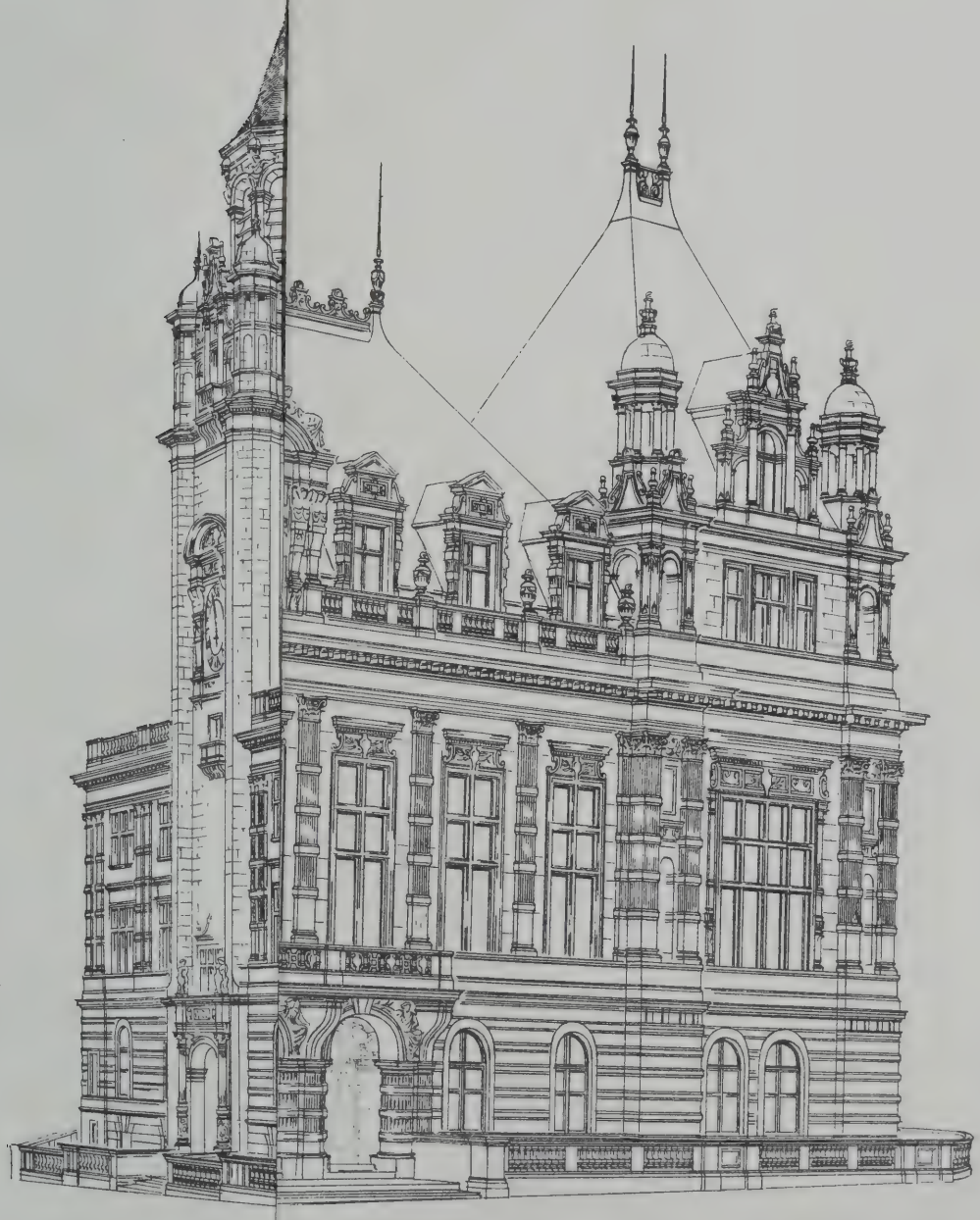
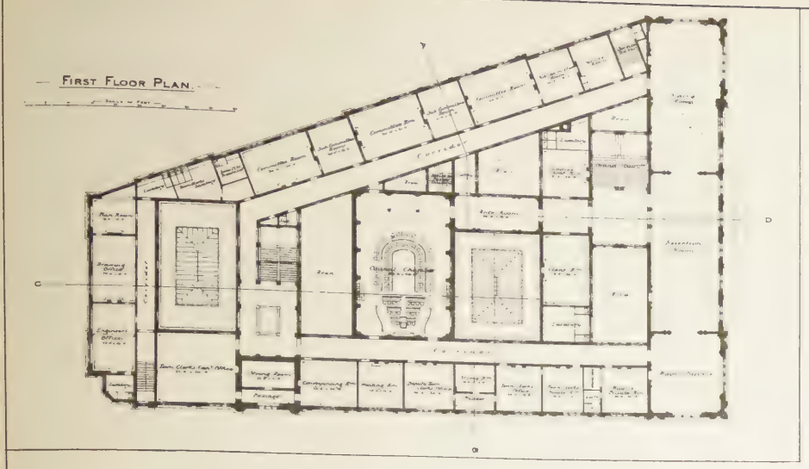
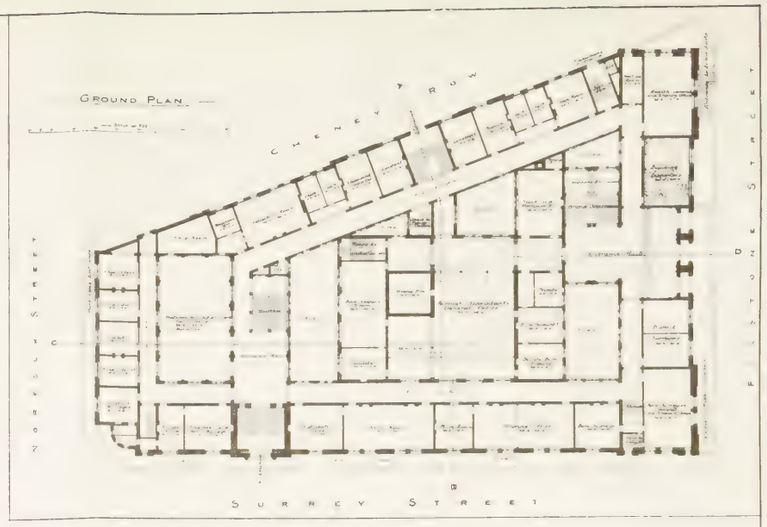


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SHEFFIELD
New Municipal Buildings







DESIGN BY WILLIAM HARVEY & BERNARD SMITH.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LIX.—No. 1856.
FRIDAY, AUGUST 1, 1890.

THE NATIONAL COMPETITION OF SCHOOLS OF ART.

THE works submitted for the annual competition for prizes, now open to the public in the gallery of the South Kensington Museum, is a satisfactory representation of the progress made in the art schools of the department. Out of the 233 schools of art and branch schools, 54,780 works were sent up for examination; over 43,000 from 317 science schools, and 37,761 works from 265 art classes. Of this large number 2,084 works were selected for competition, and only those awarded medals and Queen's prizes have been exhibited. We naturally turn first to the architectural and decorative art designs. As usual, there is very much that is feeble and commonplace; by feeble we mean want of a truthful motive and purpose in design, and this quality appears in some of the premiated works. This year a gold medal has not been awarded to any architectural design; few towns represent the winners. These are Burnley, Dublin, Glasgow, Manchester, and South Kensington. The designs for architectural subjects which take silver medals come from Chester, Manchester, and Sydney, New South Wales. We may first notice the design for a church by Heber Rimmer, Chester. The design is intended to show the styles of architecture from the 12th to the 16th century—a very ingenious idea certainly for instructing a student in the styles of English architecture, but one that appears to us to be a most mistaken view for teaching the art and science of architectural design, which is the main object of the Science and Art Department. Looking at the design in the first-named aspect, the author displays considerable knowledge of style, especially of the two latest, the Decorated and Perpendicular. The Norman and Transitional parts in the apse and transepts are less satisfactory. The apse is lumpy, the three-light windows are out of proportion. The nave of Decorated work is better, and there is a fair sense of proportion and detail. The square and rather low tower over the crossing is characteristic. The design by Charles Townson, of Barrow-in-Furness, awarded a bronze medal, and shown by ink line drawings, has a plan comprising nave and aisles, chancel, tower and spire at west end. The style is of the Decorated or 14th century type. The author has shown his knowledge of the general features of this period. His proportions are pleasing, and there are breadth and quiet treatment in the design and details, especially of the west end and tower and spire. The examiners say the square orders of the doorway are not characteristic of the style: perhaps it is not a general type; but nevertheless there are examples in which the main groups of mouldings are arranged under three square outlines. Certainly, as a design, the work is worthy of a silver medal. F. W. C. Gregory, Nottingham, takes a book prize for a design for a cruciform church with rather a heavy and extravagant tower and spire, the style Florid Decorated. The drawing in ink is firm, and the details show knowledge of the style. A silver medal has been given to a Sydney student, J. A. Kethel, for a design for a colonial mansion, in the Italian style of two orders, the merits of which are at best of a commonplace kind; but the examiners considerately thought that it should not be judged by the same standard as designs by home students. The plan is symmetrical, an open colonnade surrounding the house on three sides. The perspective is correct and neatly drawn. The plan itself is crude and formal, the offices are small, and the general conveniences ill arranged. A bronze medal is given to W. H. Martin, Birmingham, for a design for a museum and library—a Classical scheme, rather rigid, segmental pediments at the ends, and a lofty centre dome. The dome is out of proportion, and the details display ignorance of the style. The same medal is awarded to C. B. Howdill, Leeds, for the design for a public school. The square plan has an assembly-hall and six classrooms on each floor. The front is jumbled, and a low storied building, occupied by cloakrooms and other offices, appears tacked on to the high block behind it, forming the school, its lowness being rendered more apparent by the lofty tower which springs from it. Equally doubtful as a work of merit is the design for town hall, by E. T. Heazell, Nottingham, a rather poor building of a Late Gothic character, and exceedingly feeble in drawing and design, but for which a bronze medal is given. Another Sydney student, P. E. Malumby, takes this prize for a design for a bachelor's residence, Classic in style, and with a plan forming a cross, utterly impracticable as a design for a temperate climate and too much like a temple. There are four pediments with flights of steps to each front, and the interior is sacrificed to the Classic formula. The diamond-shaped panelling and other details of the inner doorways are in ill-keeping with the style. A bronze medal goes to F. B. Cooper, Leicester, for a town house, a design of considerable merit. The drawing shown is a large-scale elevation, coloured, in a 17th-century style in red brick and terracotta with a pavilion roof—the details and panels of ornament well drawn. The plans show a fairly good arrangement.

Prizes of books are awarded to several Leicester students—to W. Grewcock for a design for a village inn, a nice brick and half-timbered gable being shown; also to H. G. Riddett for a brick and stone vicarage; to E. R. O. Davis, for a simply-treated lodge and small stables of brick and half timber; and to W. Langley for a nice coloured drawing of front for village shop stuccoed, with red tile roof. The same prize is given to W. H. Cowlishaw for a carefully-drawn country parsonage; but the perspective is too heavily shaded or hatched, and the distant church on hill is out of perspective. Though there is considerable ability shown in these exercises, more attention is required to the essentials of good construction. Sections are conspicuous by their absence. Unfortunately, the students are taught by a wrong method—the style is fixed upon before the plan has been designed, instead of proceeding from requirements to an expression of style.

The architectural drawings from measurement include several examples of creditable draughtsmanship. Arthur H. Hind, Leicester, obtains a silver medal for drawings of panelling of St. Vincent's Church at Rouen and other sketches. The panelling is drawn in brown ink. Other pencil sketches of St. Maclou stairs and porch are interesting, and details of sedilia, Cassington; buttress head, Gaddesby, &c. A bronze medal goes to W. B. Savidge, Nottingham, for drawings of Church of St. John the Baptist, Tideswell—an interesting type of church with a long chancel, nave and aisles, and western tower, of Late Decorated and Perpendicular. Details of the tracery, arcade, doorways, &c., are shown. We notice the same award given for drawings of Tomb of Lord de la Warre in Broadwater Church, Sussex—a heavy and Late Gothic canopied monument—to two Brighton students, George P. Fisher and Chas. E. Georges. The sepia drawing of doorway, Aston Hall, by Walter Freeth, Birmingham, takes a similar prize; J. Smieton, Dundee, also receives it for drawings of the old church at Leuchars, Fifeshire, with some interesting arcading and circular apse of Norman date. H. Walker, Banbury, takes a book prize for a neat drawing of an oak pulpit in Orton-Waterville Church, a carved Renaissance example; also F. G. Wood, Manchester, for a sepia drawing of the Picton (miscalled "Pigeon" in official list published) Reading-room, Liverpool, with details. Amongst other book-prize drawings we notice those of Aston Hall, including details of chimney-piece and grand staircase, by W. F. Edwards, Birmingham; by O. Middleton, Peterborough, some ¼in. scale drawings of a bay of the cathedral and doorway of St. Leonard's Priory; drawings of the Royal Naval College, Greenwich, to a large scale, with minutely figured dimensions by G. Harvey, Polytechnic; drawings of monument in Holland, by H. Allen; of the Angel Choir, Lincoln, a finely-executed line drawing of this beautiful example by J. R. Halkes, Lincoln; of the elegant Tomb of Walter Gray, Archbishop of York, by J. Hamer. Though exceedingly fine outlines, the latter drawings miss the spirit and character of the detail and foliage. In this category we may also notice J. H. James's drawings of the Lady-chapel, Llandaff Cathedral, drawn to a 2ft. to the inch scale, with details; of doorway, &c., of mansion at Elstow, in sepia; and of Corinthian Tower, Brighton, by C. E. Georges. To students of the National Training School are awarded silver medals for shaded drawings of the Temple of the Sun; C. Ripper and H. Allen send cleverly-executed drawings; J. J. Hamer and J. W. Comley receive bronze medals for the same subject. Prizes in bronze are given also to J. W. Allison, G. Scott, A. Shuttleworth, and W. H. Osmond for drawings of monument finely executed in outline from a cast in the S. K. Museum.

In Stage 23, comprising designs and decorative products, we can only name a few of the contributions. These include carpets, printed tiles, mosaic floors, wall-papers, cotton hangings, lace, embroidery, silver plate, wrought ironwork, book-bindings, decorations, &c. Archibald Walker, Glasgow, takes one of the gold medals for design for a Persian carpet, in which foliage and animals are well arranged on a green ground, boldly conceived. The filling and border are well contrasted in colour. Designs for printed tiles, by L. P. Butterfield (gold medal), Kensington, exhibit a clever disposition in two colours; also one in which two blues are introduced by printing, the other colours being laid on by hand. W. T. Done, Hanley, has a silver medal for a carpet design in the Persian style, cleverly disposed, and in nice colours: the repeat is not easily traced. E. Hodgkinson, Manchester, also wins the medal for a design with flowers and foliage on a blue ground. The wall-papers are not remarkable for any special merit in design. We notice Paulina Shepherd, a South Kensington student, wins a silver medal for a paper with a folial arrangement and flowers in nice colours; John H. Cantrill, Manchester, takes a bronze medal for a bold design. L. P. Butterfield, South Kensington, has a successful arrangement with flowers. Dora Robinson, Manchester, shows a clever disposition of foliage and flowers on a dark-green ground in five colours. In these and other designs fancy and inventiveness are shown, but the repeats are not always worked out. A bold pattern in green and yellow is shown for an Eastern finger carpet by F. J. Donohue, a Kensington student (book prize). A silver medal goes to Gertrude Roots, Canterbury, for a mosaic floor design in delicate colours, of blue, buff, and light-green; the arrangement of polygons intersecting is clever and out of the common. Another pleasing design for a

hall-floor, by Thomas Barrett, of Macclesfield, receives a book prize, in which medallions are introduced; it is quiet and in subdued colours. The same prize is given to a Hertford student, Evelyn D. Foster, for decoration in mosaic, in which intersecting circles are treated with good taste.

W. Holt, of Burnley, has the gold medal for a printed cotton hanging, the merits of which are doubtful. We do not like the arrangement of quaint figures, sheaves of wheat, and flowers—it is thoroughly in the style of the 17th century; the colours are somewhat tawdry and harsh. Emily C. Brothers' design (Canterbury) receives a silver medal—a cleverly-disposed treatment of birds and foliage in greens and buffs. For cotton prints, R. V. Green, Manchester, has well won a bronze medal; also R. Pollock, of the same city; Daniel H. Shea, Burnley, a like prize for a nice design and arrangement of thistles and roses—the colouring too purple; Maggie Strang, Glasgow, for a bold curtain, with folial groundwork in colours. The entwined foliage and birds of a Glasgow student (293), the silk and gold tissue by C. Ripper (515), are other designs. The embroidered quilt (silver medal) by a Manchester student, executed on linen in silk and flax thread, outline worked in "couch" and rope stitched, is very effective. In designs for textiles we also note a window-blind in cut linen arranged in three compartments, by a Dublin student (105), another from the same school (99), for which bronzes are awarded. A very rich design for a side-board cloth, embroidered on cut linen (95), is sent by a Cork student, and wins the same distinction. A good damask pattern (18) wins a silver medal for a Canterbury student. All these are by ladies.

The designs for wrought-iron gates and metal-work are few. A bronze medal goes for an effective four-panelled gate with fan-light, and for an elegant pair of entrance gates the chief merit of which is that it is not overdone. We also notice a measured drawing of gates to choir at St. Ouen, which takes a silver medal. A silver medal is given for a jewel casket and candelabra in silver by a Birmingham student; there are weak points in the design, notwithstanding its general elegance. E. Preston, a Birmingham student, has the same prize for a very elegantly-designed hand mirror in silver. The figures of Truth and Falsehood round the border are very simply and gracefully drawn in ink outline, and the motive shows a thoroughly artistic and refined sense of the material. In another branch of design, pottery, we get a few works. A Sheffield lady student wins the silver medal for a design for plaque, in which medallions are introduced; well-drawn, and the colouring is harmonious, on blue ground. A clever and delicate treatment shown by a Poole student (400) for surface decoration. A Chester student, W. L. Hankey, wins a bronze medal for a design for hall seat, the details of which are well designed and drawn.

Designs for decoration include a clever treatment of the end of swimming-bath, Pompeian in style, by Herbert Cole, Manchester, who takes a silver medal. The colouring in shades of green and chocolate is harmonious. No. 371 is in the same style. Another Manchester student, W. H. Cantrill, has silver medal for a design for the decoration of a staircase and proscenium. The motive of open verandah is not quite appropriate; but there is much refined taste in design and colour evident. The drawing-room decoration (372) is unsatisfactory, and the dining-room treatment (332) poor in proportion and heavy, especially the frieze and doorway. A silver medal is given for a design of a stained-glass window, the subject being the "Burial of Moses," by a Birmingham student, a conception of much power and ability.

Our limits prevent our reference to the monochrome painting of ornaments, many of which are excellent, as the frieze No. 48 and No. 35; the designs for arabesques, the drawings from the antique, and the groups in oil and water-colour, foremost among the latter being students of Aberdeen, Edinburgh, Blackheath, Lincoln, Nottingham, and Norwich, and Hanley.

The modelling works are especially meritorious, David M'Gill, of the Art Training School, taking two gold medals for a circular panel relief or medallion, 454, and two delicate reliefs for a medal, admirable in the grace of the figures.

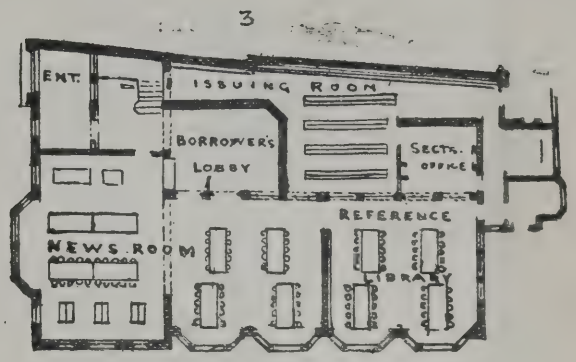
FREE PUBLIC LIBRARIES.—III.

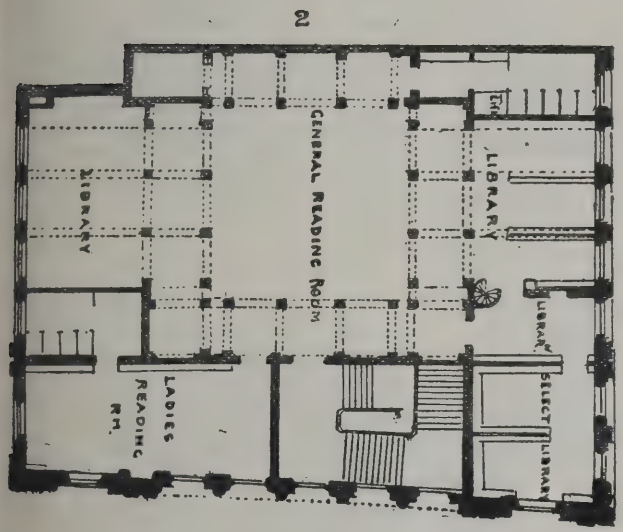
WHAT are the essentials of a building intended to serve the purpose of a free public library? Hitherto we have given a few examples of buildings that have been erected in the provinces and in London for the objects sought to be promoted by the Public Libraries Acts. They are some contribution to the solution, but it is more than problematical whether many of them have fully answered the objects. A small congested entrance, a public lobby space inadequate to meet the demands of the public who go to borrow books, difficult access to the cases in galleries, and sometimes very defective light and ventilation are a few of the mistakes which one sees in visiting these buildings. We will now briefly point to some of the essential principles of library design. First, as to entrance and access. In some new buildings the tendency has been to cramp these and to reduce the width of the entrance to that of a private house. A great mistake. The larger it is in reason the better. The entrance hall should bear some proportion to the number of books to be lent out, or to the probable demand made by borrowers in the district. The number of readers in a given area may be approximately ascertained before the plan of a public library is prepared. We enter such an institution to find the entrance hall crowded with persons waiting to borrow or return books, others blocking the way by gossiping, or mere idlers, many of whom infest the free library with the object of killing time or lounging about. As a refuge for the mere idler, the free public library is open to abuse, and is one of the things that authorities will have to consider. But the crowd which fills the entrance halls of many of the Metropolitan libraries at certain times is one of the impediments to a public lending library. There should be some arrangement by which the borrower or visitor can enter at one door and leave at another to prevent confusion. At any rate, the hall or borrowers' lobby should be roomy. In large public buildings there ought to be one entrance and exit for borrowers who come and go, and another for those who use the news-room, reading-room, or reference library. Mr. Mountford, in a paper on the subject, suggested that there should be an outer porch, wherein copies of daily papers might be posted for the benefit of those who, being out of employment, want to see the advertisements early, before the library doors open: an excellent idea for large libraries in popular places. Our idea of a properly planned entrance and borrowers' lobby or public space is that it should be central between the news and reading rooms, that the lending library should immediately adjoin it, and have the book shelves in convenient proximity. The librarian and his attendants should command this space, or be near it. A side position is undesirable for an entrance to a large library, as there can be less supervision exercised. The public space for borrowers should be at the side, or be a prolongation of the hall, either open or separated by glazed screens, and should be of the whole width of hall or larger. One good arrangement is to inclose the space by a counter projecting into the lending library, which may be in a line with the entrance. Thus entrance-hall, space for borrowers, and lending library may be arranged on a central axis; on each side of the hall being arranged the news and magazine rooms, ladies' reading-room, and librarian's office. This distribution would give a general plan of a ⊥-shaped kind, with the cross piece downwards facing the street. The selected design for the Bermondsey Free Library is of this description. (See our remarks last week on the designs.) The whole width of the lending library may be given to the hall and borrowers' lobby on the principle we have named.

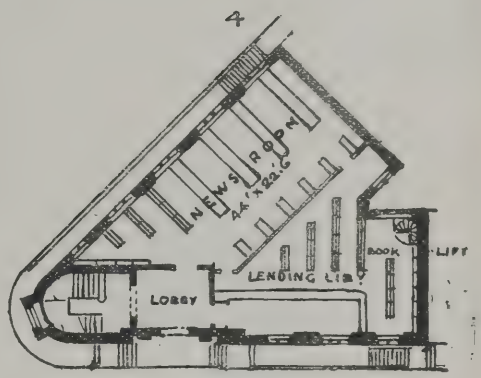
Easy supervision is next to be considered. This desideratum can only be fulfilled by grouping the apartments round the hall, and in placing the librarian's office in a central position so as to command the rooms on the ground floor. Circumstances will vary the position assigned to the librarian. He must have easy access to the departments, and should, if possible, be located next the hall, having a staircase to give access to the upper floor, and doors opening into lending library and news-room. The lending library should have communication by a staff stairs—often a spiral iron stair—to the reference library and store-rooms above. The attendants at the "issue" and "return" desks, which should be placed in connection with the counter surrounding the public or borrowers' space, should be able to see what is going on in the news and reading rooms, and with this object in view may be placed on opposite sides of the borrowers' lobby, glazed screens being erected, if necessary, round the lobby. Another of the requirements for easy supervision is the readiness with which books may be obtained, and the advantage of having cases not more than 6ft. 6in. high, so as to be within reach of female attendants, is obvious. The economical distribution of the cases or racks we will consider under another head, and to reach books on shelves high up ladders and galleries are required. Intercommunication between the departments is an essential for public convenience, and really resolves itself into good planning. Passages and corridors should be avoided; indeed, the most convenient plan is one which allows a person to pass from one room into another by openings between them. Thus the news-rooms and reference library, if on one floor, may be made *en suite* to open into each other, as shown in the Clapham Library, Fig. 3. The lending library should be on the ground floor, and, as we have said, in immediate connection with the hall and public lobby. It is not a public room, but filled with cases of books, in parallel rows about 3ft. apart, so as to allow of passage-room between them. The student and ordinary visitor to a library will first enter the news and magazine room; he will afterwards saunter into the reference room, where he will probably sit down to peruse a few books, and in passing from one into the other room it is not desirable that he should traverse a passage or cross the public lobby, which is generally taken up by the class of readers of fiction, chiefly ladies, who seldom enter the other departments, and who are in a state of constant migration to and fro. The news-rooms, being the most frequented, should be spacious, and have two doors, but placed so as to prevent a thoroughfare. The exit door should be within sight of the staff.

Accommodation is an essential point of plan. The architect has to consider two sorts of accommodation, one of books the other of the public. We have already noticed the value of a spacious entrance hall and lobby for borrowers. A great deal depends on the system of shelving and stacking the books. Three plans are in vogue.









One is the "alcove" or bay system, in which the cases are made to project at right angles from the walls between the windows forming bays or alcoves; another consists in placing the racks flat against the walls, and a third plan is in placing the racks in parallel rows across the room about 2½ft. to 3ft. apart. Whichever plan be adopted is of the first importance to the architect in planning his rooms, so that he may distribute his window openings and doors accordingly, and decide upon a width and length of room for the racks. On page 897 in our last volume we have shown these several arrangements. Plan 3 shows the alcove system as adopted at Edinburgh, plans 1, 4, 5, and 6 the other two arrangements. The plan of the Belfast Public Library, Fig. 2, which we now give, also illustrates the bay system, which has been carried out at Wigan and other libraries very successfully. There are some decided advantages in the alcove plan; it economises space, it allows for classification into departments of literature, it gives more light on the racks, and it enables readers to occupy the quiet of a recess undisturbed by the other visitors. Architecturally the bays facilitate the division of the room by columns, and thus aid the effect. Taking, as an example, a rack 5ft. long and 7ft. high, and allowing 10 books to every square foot, we shall get $7 \times 5 = 35 \times 10 = 350$ books, and supposing the room to have 10 such racks placed at right angles to the walls, there will be accommodation on this plan for 3,500 books. The centre of the room can be used for reading. As to the treatment of side walls, every case must be decided by circumstances and the need of light. Sometimes it is desirable that the lower part of the walls should be entirely given up to book room, and that the windows in the walls be placed as high up as possible, so as to allow flat racks or bookcases of 5ft. or 6ft. high to be placed below them. In the lending and reference libraries, standard bookcases 7ft. or 8ft. in height, exclusive of plinth and cornice, and 18in. in depth, with shelves on both sides, should be provided; the shelves ought not to be longer than 3ft. 6in. and be movable. For higher cases a gallery is necessary. For this height ten shelves can be obtained for octavos and 12mo. books; but for larger books, folios and quartos, there would be about eight shelves. For wall cases a ledged base is required about 18in. deep and 3ft. high, the upper portion of case being 9in. deep. An allowance of ten volumes per lineal foot is calculated for a lending library case ten shelves high; reference books are estimated at nine volumes per lineal foot. Details of libraries have been given in Mr. Greenwood's useful work on Public Libraries, a new edition of which has been lately published.

The public accommodation is so directly connected with the book provision and the manner the cases are arranged, that the architect may devote his principal attention to the latter. A small public library to accommodate, say, 10,000 books should be planned, therefore, with distinct reference to the space occupied by the books.

We have endeavoured to give a few typical arrangements of economical plans. Those we now illustrate are good examples of buildings erected under limitations of space. Plan 1 is the ground plan of the Darlington Library. The entrance and public space are skilfully aligned, and in direct connection with the lending department and other rooms. The library has a gross number of 14,390 books, and the average number of visitors to the reading-rooms daily is 950. The dimensions are as follows: Lending library, 57ft. by 29ft., lighted from roof; reference library, 36ft. by 29ft., with north light and top light, having two glazed bookcases 16ft. long, each capable of holding 3,000 vols., two reading tables 14ft. long by 3ft. 9in. wide; general reading-room, 51ft. by 29ft. By glass-panelled doors in the lending room the librarian, whose desk is in front of the centre, can see every person who enters the lobby, reading-room, and reference-room. The indicators, which run from the desk, give record of 2,400 volumes. The bookcases contain 32,000 volumes. Cost of building was £8,000, and the architect was Mr. G. G. Hoskins, F.R.I.B.A. The Belfast School, designed by W. H. Lynn, R.H.A., Fig. 2, represents a plan in which the rectangular area is cleverly arranged with a central reading-room, with the libraries opening out of it. The architectural effect is good, and the lighting well managed. Plan 3—the ground floor of Clapham Library—shows a satisfactory *en suite* arrangement of news-rooms and reference library, designed by Mr. E. B. I'Anson, the cost £3,865. The news-room is the largest, and is 57ft. by 27ft., and will hold 150 persons. The issuing room or lending library has space for 27,000 volumes, and is lighted by three lanterns. It has wall and centre cases. From the borrowers' lobby two large swing doors open into the news-room; a large room upstairs, 45ft. by 24ft., can be

used as a lecture-room. Plan 4 represents the Clerkenwell Library, ground floor. The news-room is 44ft. by 22ft. 6in.; the lending library 25ft. 6in. long and of triangular shape; a good counter and lobby is accessible from the entrance, and there is a book lift and stairs. The upper floor contains a large reading-room 52ft. by 22ft., with transverse cases, and a reference library 24ft. by 22ft. The plan is a clever adaptation of a triangular or corner site, the staircase occupying the corner.

The increase in these valuable institutions during the past few years has been remarkable. There are now 209 public libraries in the United Kingdom, of which no fewer than 76 have been provided during the last four years, and the number promises to steadily grow as the educational and recreative value of such establishments becomes more fully appreciated. The latest addition to the metropolitan parishes which have adopted the Acts is St. Mary, Newington; but in several other cases the adverse vote of previous polls of former years will probably be reversed next time the ratepayers consider the question. Architects will do well, therefore, to study the question more thoroughly, for in several recent competitions we noticed designs exhibited showing a ludicrous failure to grasp the elements of the problems set.

LANDSCAPE GARDENING.*

VERY few recent attempts have been made to treat the principles of the art of landscape gardening as an important accompaniment to architecture. The architect has, in fact, very seldom the opportunity of devising a scheme of laying-out grounds in connection with his buildings. Often the work of the landscape gardener has been done before he is called upon to design his edifice; frequently Nature has already accomplished all that is required, or is left without interference, and what is done by art to improve the surroundings of the site is handed over to the estate gardener or steward, who often, through ignorance, spoils the site and grounds by the ruthless removal of trees, and by general levelling operations, which completely destroy the character of the landscape, by ignoring the connection which should subsist between the park and the surrounding scenery. Few architects are prepared, either by education or natural aptitude as artists, to undertake the arrangement and formation of grounds, and therefore any hints and suggestions on the subject of landscape formation are of value. Mr. Henry Ernest Milner, F.L.S., Assoc.M.Inst C.E., has contributed his experience and artistic conceptions on the subject in the form of a handsome folio volume on "The Art and Practice of Landscape Gardening," illustrated by plans and etchings. The work is practical and suggestive. Many of those still living can remember the time when the house and garden were planned with the most rigid formality, the endeavour being made to produce an air of artificiality, by reproducing Italian and French features, and to separate, as it were, the gentleman's estate from the surrounding landscape as much as possible. Many of our old parks and estates still preserve this appearance. Mr. Milner follows in the wake of Nature: his taste is essentially for the English or picturesque method of formation, and in this respect he develops the principles established by Repton in his able and interesting work on landscape gardening.

The age of pictorial effect followed as a reaction that of the Italian or Classic landscape style. Mr. Milner enumerates some of the elements of the beautiful in landscape. Water, varieties of curvature, undulation of surface, contrast, gradation of light and shade, direction of lines, masses of foliage, outline grouping, effects of distance, openings in trees, all lend their aid, and become valuable agencies in the hands of the artist.

Some useful hints are given on the "approach," the first feature to decide upon in designing a park, which may even in some cases determine the site of the residence. Many estates have been ruined by a bad and ill-devised carriage approach. The great principles to bear in mind is that the road should appear to be a naturally direct approach; that while straightness is to be avoided, the curvature or deviation should result from the undulation of the ground, from some obstacle like a clump of trees. A curved road commands variety of views, and is generally of easier formation on account of the levels. The straight approach is admissible only for grounds which are flat, and when the building to be led up to is of a palatial or Classic character. We can, for example, admire the stately avenue leading to Hampton Court Place. The author recommends 11ft. or 12ft. in width for one carriage, and 16ft. to 18ft. for a double drive, a sharp curve requiring a greater width. The main drive should rise gradually to the house, or at least when the house comes in view; the impressions obtained from it at different points should increase in interest at every turn. Several sketches of treatment are given which indicate how advantage may be taken of the line or direction of the public road to form the entrance-gates. A lodge should be placed to command a length both of the drive and public road, and the entrance is better placed at the foot of a hill, and not on the rise or at the top. Speaking of the site of the house, as regards the aspect, the south-east is preferred for the main front in the Southern and Midland counties of England; in the Northern counties a more southern aspect is recommended, so as to gain full advantage of the shorter period of sunshine. Our author says: "It is not desirable that the aspect of a residence should be sacrificed to secure prospect." A fine view may be taken better from a position in the garden than from the windows. It is an advantage to create new points of interest. Some useful remarks are given about boundaries, which should not be too formal, but allow the eye to travel between groups of trees, so as to give the idea of distance and space; the necessity of obscuring by plantations unpleasant objects. A southern hillside is a good situation for a house. Referring to shelter, the author says planting may be employed on north-eastern, northern, and north-western sides, and on southern coasts on the south-western side. Much, of course, must be left to circumstances, and a compromise between aspect, prospect, and shelter made. Good prospects to the south-east and south-west being obtained, the main entrance may be on the north-western side, the offices on the north-eastern, and the garden toward the south-east.

The value of the terrace as a base to a building cannot be over-estimated; it is, in fact, an artificial arrangement or setting, which serves to separate the rural and picturesque portions of the grounds from the building. The straight lines of slope, balustrade walks, and beds harmonise with the architectural design, and the more important the building the more artificial and pretentious should be the terrace, the greater its breadth and length as a base. The parterres should be formal, geometrically arranged, and the style of architecture should dictate that of the terrace. A few plans and details of terrace arrangements are shown; beds for flowers, statuary, foliage plants, clipped yew, and box are necessary accompaniments to the terrace-garden. Terrace walls, flights of steps, and balustrades are considered, and some useful dimensions are given as to height and thickness of walls. An etching is given of the terrace arrangement to Friar Park, Henley, a residence in a Late Gothic style, designed by Messrs. Satchell and Edwards, architects.

The author's remarks on arrangement and formation are to the point. The plan of a garden must be controlled by such conditions as contour, natural levels, soil, the display of surrounding features. Any attempt to arrange a garden or a park upon paper without studying the site must end in failure. Various positions and views have to be considered and dealt with; the factor of growth of trees must be taken into account. Many things have to be avoided, such as straight lines, meaningless walks, sameness of groups of planting, uniformity of curvature and outline of trees. From the terrace outwards nature should be simulated; on the other hand, as the house is approached the planting and work should become more artificial and more intricate. Suggestive observations are given by the author about planting groups as screens for the purpose of shelter, or to shut out observation, and the value of arranging the outline on plan so that its form cannot be followed by the eye; it is this resource of the artist, the charm of expectancy rather than revealing all at once, which adds to the natural beauty of the landscape garden, and gives apparent spaciousness. Variety in outline, as well as in plan of groups, is an important point. Mr. Milner illustrates how curved walks and groups of planting should be arranged, and the levels formed to produce variety and prospect. We have no space at our disposal to treat of the practical part of the work on Formation and Planting, which latter contains useful lists of trees and shrubs suitable for different positions and soils. The important feature of Water is discussed in another chapter. Fountains, structures such as seats, pavilions, and bridges, hothouses, and other accessories, are also dwelt on. Public parks and cemeteries are illustrated by plans of the Buxton Public Gardens and Stoke Cemetery. A building estate forms another example. In the examples of work an etching is given of a view of the grounds and palace at Keszthely in Hungary, the former laid out by the author, and the latter from a design of Herr V. Rumpelmeyer. The arrangement of the gardens is shown by a plan. A more suggestive example of laying out a garden or park is that of Peverey, near Shrewsbury, for Sir Offley Wakeman, Bart., though the work is yet incomplete. The river Perry runs, though, in a north-east to south-east direction, the ground falling on both sides towards it. The land converted was agricultural, and consisted of several fields. Of the house and terraces, designed by Mr. Aston Webb, in a Late Gothic style, we gave a view on May 16th. The house occupies an elevated part of the beautiful grounds, and its site was determined by the architect and Mr. Milner, the latter of whom laid out the park and gardens.

* The Art and Practice of Landscape Gardening. By Henry Ernest Milner, F.L.S., Assoc.M.Inst.C.E. London: Of the author, Dulwich Wood, Norwood, S.E.

SHADOWS—IV.

WE now come to the system of shadows for curved surfaces. The principle remains the same, that of finding the intersection of the planes of the shadows with the horizontal or vertical planes.

In Fig. 12 we have a semicircular doorway flanked by two buttresses. The shadows thrown on the wall by these projections are easily found by means of the plan, as at A A, *a a*, B B, *b b*, S S, &c. The plane of the shadows of S S intersects the moulding C H on plan at *c*, and in elevation at C; the plane of intersection being at 45°, the shadow at C will take the form of the moulding reversed. The shadow of H *h* meets the wall plane of the doorway at *h* H.

We have now to find the shadows thrown by the soffits of the inner and outer arches of the doorway. The centre from which these two arches are drawn is at D in elevation and *d* in plan. We have remarked above that the shadow of a point is equal in distance, vertically and horizontally, to the projection of this point from the plane which receives the shadow. The shadow of an arch, being itself the shadow of an infinite number of points taken on the circumference of the arch, and the shadow of these various points being distant from these same points in proportion to their projection from the wall-plane, the curve contained in these shadow points will be equal or proportional to the circumference itself, and therefore have the same radius as the circumference which casts the shadow. The centre, therefore, with which to describe the curve of the shadow, will be the shadow of the point serving as centre for the arch. We must find the shadow of the point D *d* at E *e*. Then if with the point E and the same radius as for the outer arch we draw a semicircle, we will find that the circumference will pass by the shadows of the various points taken on the circumference of the outer arch; this circumference will therefore be the shadow of the arch. In the same manner, for the inner arch, the projection of the centre D *d* gives us the shadow F *f*; this point F is the centre from which to draw the shadow of the inner arch.

Thus, to obtain the shadow thrown by the soffit of an arch, drawn with any point as centre, we have to find the supposed shadow of this point on the plane from which the arch projects, and with the point obtained as centre and the original radius describe the curve of the shadow.

At Fig. 14 we have a detail of the shadow thrown by the projecting portion of the string mouldings. The shadow of the point A of the moulding falls in this case on the wall plane

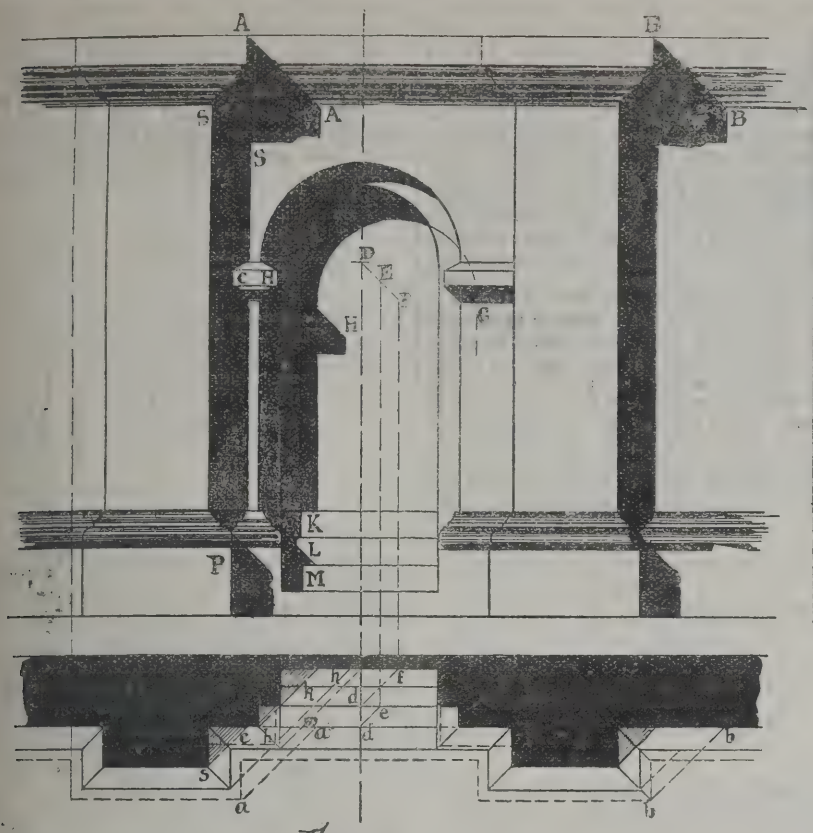


Fig 12.

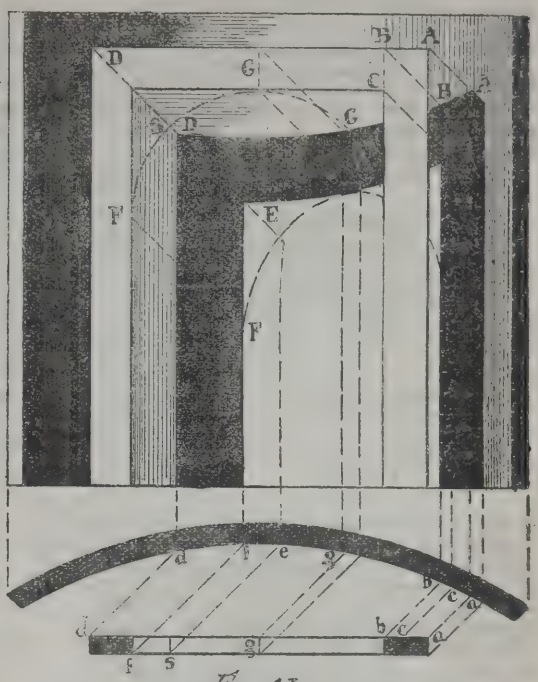


Fig 13.

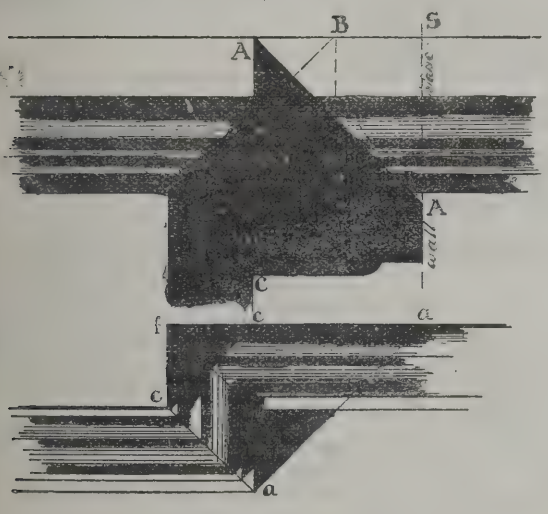


Fig 14.

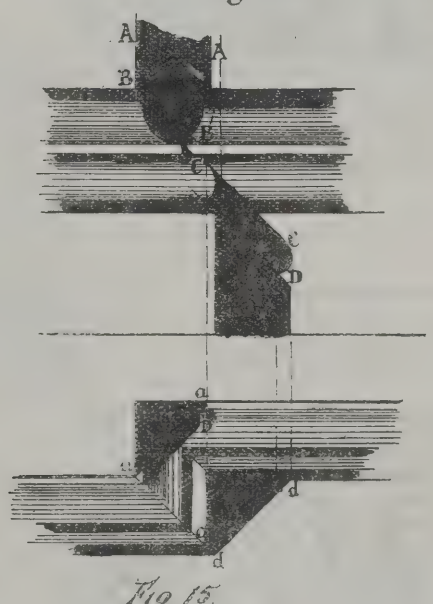


Fig 15.

below the string-course at A, which point is given us by *a* in the plan. It was, however, possible that the shadow of the point A may have been stopped by one of the component mouldings of the string before it reached the wall-plane. Let us suppose such a case, and that the moulding is not continued beyond the points A C, and that we have only the plane wall surface A S, against which the shadow of A is cast. A A is the shadow line at 45° from the point A. Let us now continue the string mouldings beyond A C, and trace the section of the moulding A B projecting from the wall plane A S. If the shadow line A A meets the section of the moulding at any point, we know that at this point the shadow from A would have been stopped by the moulding, and so not have reached the point A on the wall-plane. In Fig. 14, however, the shadow line A A is not stopped by the section of the mouldings, and therefore proceeds to the wall at A. The line B C is at 45°, and similar to A A. A B is also necessarily equal to the amount of the projection of the return of the moulding *c f* on plan. Thus, in similar cases, we have to mark off from point A, a distance equal to *c f* on plan, as at B, and from the point B draw a line B C at 45°. If the line reaches the wall plane without touching the section of the moulding, the shadow of this point, or the corresponding point A, will be on the wall plane. If, however, the line at 45° touches the moulding at any point, at this point the shadow is stopped, and the remainder of the shadow of the moulding follows a different form.

Fig. 15 is a detail of the shadow thrown by the moulding of the plinth. The plane of the shadow A B meets the wall-plane at A, and also cuts the congé of the moulding at 45°, forming the shadow B. The shadow of the point B would reach the wall-plane at M, but is interrupted by the congé and stopped at B. The remaining shadow at C D is easily found by means of the points of the plan *c d*.

It would be good practice for the student to draw to a large scale a series of different forms of mouldings, and find the shadow thrown by the projecting portions on the rest of the moulding, first obtaining the shadow points as thrown against the wall-plane, and then the points where the plane of the shadow cuts the section of the moulding, thus obtaining the true shadows. A little practice, and he will find no difficulty in drawing these shadows.

We now come to the system of shadows thrown by projecting bodies on concave or convex surfaces. In Fig. 13 we will suppose the projecting body to be an entablature supported by columns, and represented in the figure simply by F O B, &c. From the points on the plan *d g b c a*, &c., we draw the lines at 45°, meeting the concave surface at *d g b c a*; the intersection of the projection of these points, with the shadow lines from the corresponding points in the elevation, will give us the shadow of these various points; then by drawing the curves contained by these points we obtain the shadow of the whole body. The shadow of the semicircle F S G is found in the same manner. This Fig. demonstrates what we have remarked above—viz., that the shadow of a point descends to a distance equal to the distance of the point causing the shadow from the plane receiving the same.

Arthur Vye Parminter.
Palais des Beaux Arts, Lille.

CARPENTRY AND JOINERY.—XXXII.

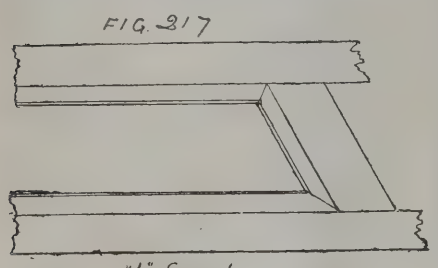
Window Finishing.—(*Continued.*)

In the preceding article, a general outline was given of what pertains to a "full-trimmed window;" however, some of the details were not

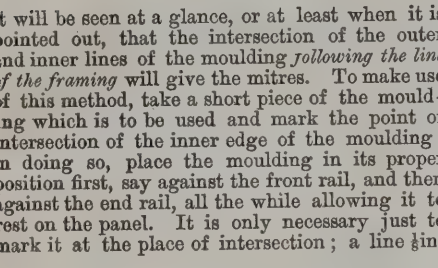
entered into, so before entering upon other varieties, it will be better to attend to these.

The soffit has a *tongue* allowed for and worked on the inner rail, which enters into a plough groove in the top inner casing of the sash-frame. This will be seen to be very serviceable, for obvious reasons. The moulding of the acute and obtuse angles of the soffit may present a little difficulty to some.

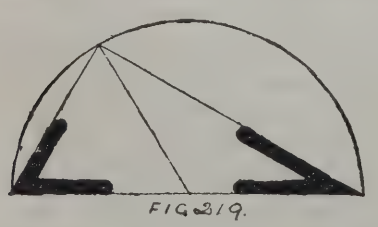
Fig. 217 shows the two angles referred to, and



it will be seen at a glance, or at least when it is pointed out, that the intersection of the outer and inner lines of the moulding *following the line of the framing* will give the mitres. To make use of this method, take a short piece of the moulding which is to be used and mark the point of intersection of the inner edge of the moulding; in doing so, place the moulding in its proper position first, say against the front rail, and then against the end rail, all the while allowing it to rest on the panel. It is only necessary just to mark it at the place of intersection; a line ⅛in.



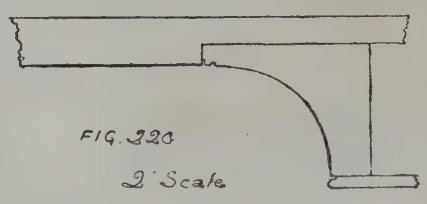
long in each case will suffice. The moulding may be cut to the *rake* by marking it when laid near to its position. In the cases wherein one end of the piece of moulding has ordinary mitre, make the centre or obtuse angle intersection first, as it is much easier taking the length and mitring the other end afterwards. The end piece should be fitted first, and the obtuse angle first of this end-piece of moulding, as it is much easier fitting the acute angle. In cutting with the saw (which should be a fine one) allow the moulding to be a little long, and with a *mitre plane* fit the respective ends of the moulding to suit the angle before putting in at all. This trial is best made by laying the two pieces of moulding upon the top of the rails, bringing



them near to the edges of the rails and at the angle they are intended to be placed in.

Fig. 218 shows the framing of one end of the soffit without any moulding, and also gives two pieces of moulding placed so as to test whether the intersection is a good one or not. This is a somewhat roundabout method, although pretty generally practised, and it is as well to know it; by it no knowledge of any lines or principle involved is necessary. The correct method is very simple.

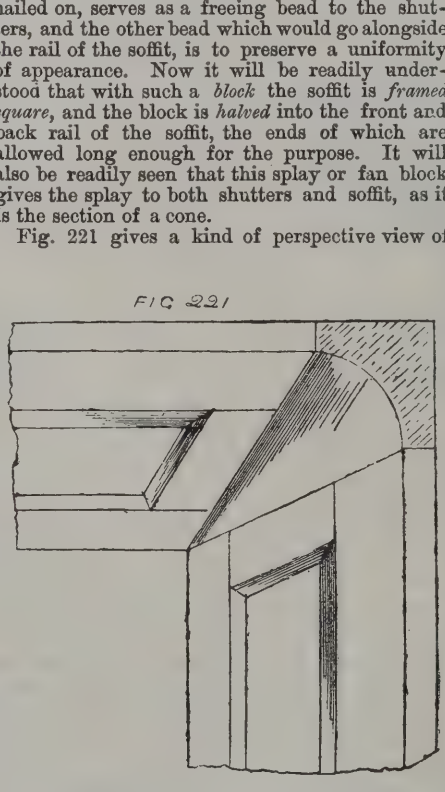
Fig. 219 shows how the lines are obtained. Having the line shown as horizontal in the figure, draw a line forming a similar angle with the horizontal line that the end rail of the soffit does with the front rail, let the point of meeting of the inclined and horizontal lines be the centre of a semicircle, which describe as shown, join the extremities of the diameter with the point at which the inclined line meets the circumference, and you have the bevels to cut the ends of the mouldings to, so as that they will intersect perfectly in the acute and obtuse angles. This method suits for all such angular framing when the angles are formed by the meeting of straight lines. When it is the case of a curved line meeting a straight one, the mitre or intersection of the two mouldings will be *curved*, not straight. When there are a number of soffits to mould having the same inclination in the end rails, it is best to make a *cutting block*, putting in a right and left-hand cut of each kind (bevel) to guide the saw, and the time will be saved, as, if the cuts are made accurately with a fine saw, one shaving off with a *mitre plane* will suffice; or, in most cases, if the cutting is done with a *dovetail saw*, it will do without any planing. In former times, say a generation or more ago, when the soffits of window finishings were elevated (splayed), a somewhat simple method was



adopted to get over the difficulty of the corner or angle, viz., by the insertion of a *fan block*.

Fig. 220 shows a front elevation of the outer end (that nearest the spectator in the room) of such a fan block. The lower bead, which is shown nailed on, serves as a freeing bead to the shutters, and the other bead which would go alongside the rail of the soffit, is to preserve a uniformity of appearance. Now it will be readily understood that with such a *block* the soffit is *framed square*, and the block is *halved* into the front and back rail of the soffit, the ends of which are allowed long enough for the purpose. It will also be readily seen that this splay or fan block gives the splay to both shutters and soffit, as it is the section of a cone.

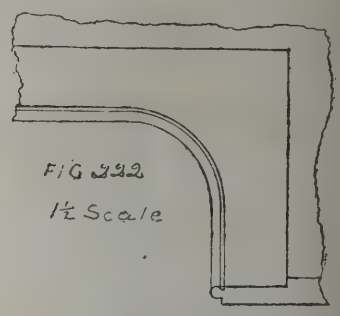
Fig. 221 gives a kind of perspective view of



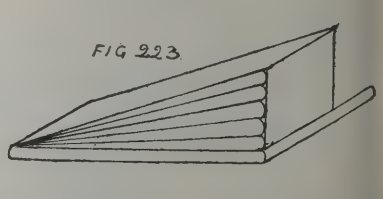
the fan block, and part of shutter and soffit, so as to give a pretty clear idea of the finished trimming. No architrave is shown in Fig. 221, to avoid complications. However, the architrave is often put on just as if the angle were square—that is, the top and side architraves intersect at right angles, showing part of the end of fan block. In other cases when the architrave is a *double-faced* one, the bead on its inner edge is carried round the quadrant of the block, and the first sunk face forms the right angle where the rebate or check forms the second face. (See Fig. 222.)

Of course, it is quite possible to have the architrave forming a quadrant corner throughout its full width, thus showing lines parallel with the fan block. But since the fan block has been almost completely set aside, other kinds of blocks have been introduced in order to serve the purpose.

Fig. 223 gives a view of a conical-reeded block which will suit, or *fluting* may be substituted for the reeding. When a block of this kind is used the soffit has to be framed with its outer cross rails splayed, and so that the block when fastened to the soffit, the rail will show a suitable margin that is equal at least to the top rail of shutter

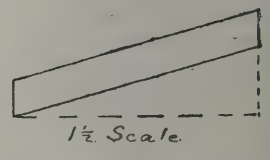


Instructions were given in the 29th article of this series as to how the bevel on the top edge of this splay block may be obtained; but in that article it was jamb-linings which were being treated of, but the thing required is the same. However, a very simple arrangement for getting the bevel on the top edge of this splay block is having the working lines of the window-finishing *laid down* upon a panel; whatever splay or bevel the shutter have, if the soffit is to have the same, get out two wedge-shaped pieces having their butt ends of breadth equal to the splay of the soffit, plus, say ¼in. for sinking or housing into the soffit, and a point end equal to the depth of this sinking; then lay these, when planed, upon the panel and just over the *plan* of the front shutters, the



take a straight-edge and lay it on across the upper edges of these blocks, and it will be seen how much has to be planed off these top edges so as to suit the soffit. It will be found that it is always off the outer part of the top edges—that is, towards the back side, that the planing off has to be done, so that in getting out the blocks with square edges, first of all it does not require any extra amount to be left on.

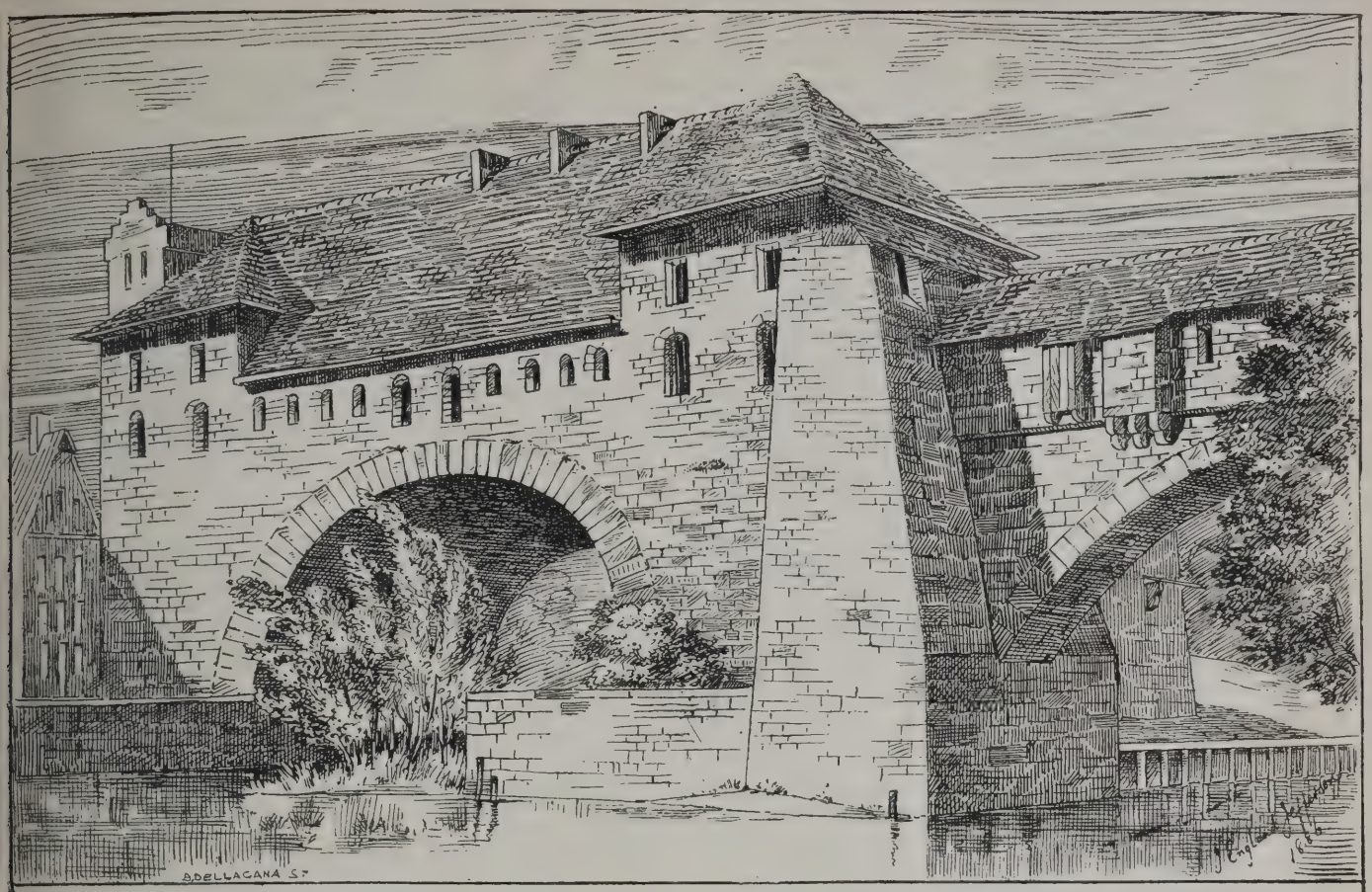
Fig. 224, which is almost unnecessary, shows the wedge-shaped block, and the under drawing of the figure shows the plan of this wedge-shaped piece; as it will be readily understood



that its ends will require to have the splay of the shutter, seeing that the plan of the shutter is in plan, and that, of course, is splayed.

SUPERFICIAL v. CUBIC CAPACITY AS STANDARDS FOR SMALL HOUSES.

At the annual congress of the Sanitary Association of Scotland, held at Perth on Thursday in last week, under the presidency of Dr. Cameron, M.P., a paper was read by Mr. John Honeyman, F.R.I.B.A., of Glasgow, on the "Substitution of a standard of superficial area for one of cubic capacity in small houses." The author explained that hitherto there has



KETTERN STEG PART OF CITY WALLS OF NURNBERG
AT THE EFFLUX OF THE RIVER PEGNITZ

been only one way of securing space for the occupants of houses—viz., by prescribing a certain number of cubic feet for each; and he desired to suggest another, which was in many respects preferable—viz., to prescribe a certain number of superficial feet of floor area. The object of such specific rules was, of course, to prevent overcrowding—probably the worst of sanitary evils. It was not seriously contended by anyone that 300 or even 500 cubic feet was enough for an adult for, say, the working man's eight hours' sleep; yet cases had been recorded in Glasgow where each adult had only 86 cubic feet. Overcrowding was a nuisance which must be put down summarily by some rule of easy application, and that legal definition of space was merely an instrument to that end. The chief merit of the rule he had suggested, as distinguished from the existing rule, was that it allowed more freedom of action to those who had to turn expensive sites to account in providing dwellings for the poor. It would also give them more freedom in dealing with existing property. Within moderate limits they could give the poor superficial area easier than cubic capacity, and therefore by following that course they made it easier to get a supply of houses for them, which meant that rents would be easier, even when sufficient inducement remained for builders to invest money in such property. In this regard he did not approve of the Police Bill at present before Parliament, in so far as it would prohibit civic authorities from converting certain large buildings into dwellings for the poor. The sanitary results of his proposed rule would be even more important than the economic. So far as the administration of the law was concerned, the change of standard would make no difference. It would be as easy for sanitary officials to apply the one as the other. The area would be a shade more easily got than the capacity. The position of the occupants of houses affected by the rule would be improved. Their houses would be cheaper, they would be larger, and more comfortable, and they would be more easily ventilated. These things had a direct bearing on health. For the purpose of illustration and comparison, he took a tenement having on each floor three houses of one apartment and one of two apartments. If the single apartments were to accommodate three adults with 400c.ft. each, they would require to be 10ft. high and to measure 12ft. by 10ft., and the frontage of the tenement would be 35ft. and the depth 32ft., and the site would extend to, say, 240 yards. Taking that as it stood, it was evident that if they were content with an area of 40ft. super. per adult, these houses would pass for three occupants either by the one standard or the other. But the difference was that whereas by the new Glasgow standard of 400c.ft. the tenement must have 10ft. ceilings, by the other the ceilings might be less. Suppose they were only 8ft. high, the rooms would still have the cubic capacity which up till last week was generally considered enough as a minimum—namely, 300ft. Now, he need hardly point out that if they reduced the ceilings to 8ft., and so took off the total height of the tenement, they would considerably reduce its cost. They could either do that or, maintaining the height, secure an additional story, still reducing the cost per house, and accommodating a larger population on the same area. The height of ceiling suggested (8ft.) was quite sufficient for all practical purposes. But he was not sure that the area of 40ft. per adult was sufficient. They might venture to fix the minimum at 45ft. without throwing any additional burden upon the poor householder.

The cost of a four-story tenement would be about £1,200, including ground at £1 per yard; and the cost of a five-story tenement would be £1,300, including other twelve yards of ground at £1. Taking the rents at a low figure, say £5 10s. for the single apartments, and £7 10s. for the two-room houses, the rental of the four-story tenement would be £96, or a gross return of 8 per cent.; while the rental of the five-story tenement would be £120, or a gross return of 9¼ per cent. These houses would have a cubic capacity of 360ft., and they would be large and more comfortable and more healthy.

A short discussion took place upon Mr. Honeyman's paper, in which it was pointed out by Dr. M'Vail (Kilmarnock) that the principle advocated was already applied to dairies and cowsheds in some quarters.

KETTERN STEG.

THE sketch of the above, which we herewith illustrate, is a portion of the walls by which the ancient town of Nuremberg is surrounded. The small river Pegnitz cuts the city in two, and during its progress through is crossed by some eight bridges. The subject of our illustration is that part of the town walls which bridges the river at its efflux. Nuremberg, or Nürnberg as the Germans call it, was once the centre of art and trade, and the most important town in Germany. During the 18th century it sank into comparative insignificance, and though perhaps it will never regain its position of greatness, yet it has risen commercially very much of recent years, and is well known for its manufactures of children's toys and lead pencils. Innovations are steadily making way, yet Nuremberg maintains its ancient aspect probably more than any other town of like importance, and with its antique towers, rambling streets, and quaint gables, is picturesque in a high degree.

A collection of drawings and designs, 500 in number, by the late Thomas Stothard, R.A., recently presented to the nation by Mr. Felix Joseph, has just been removed from the South London Art Gallery to the Nottingham Castle Museum, which is its final destination. These pictures are in course of arrangement in a special gallery at the museum, to be called the "Felix Joseph Gallery," together with some 600 other drawings by celebrated deceased Royal Academicians and others, likewise presented by Mr. Joseph.

Mr. E. Long, R.A., and Mr. T. Woolner, R.A., have awarded the scholarship in art of the Crystal Palace School of Art, Science, and Literature to Miss Edith Struben, a student from South Africa. At the exhibition of students' work on Saturday these gentlemen also adjudged a silver medal to Miss A. M. Scrase and a certificate to Miss Struben for landscape and architectural painting. In the oil painting classes a silver medal was awarded to Lady Hume. Miss Diana White gained the silver medal for a head modelled from the life.

A residence for Mr. E. J. Jenkins will shortly be erected on the Tyn-y-Pwll Estate, Whitchurch, near Cardiff, from plans prepared by Mr. Charles C. Jones, architect, Cardiff.

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CONTEMPORARY BRITISH ARCHITECTS.—NEW LABORATORY AND WARE-ROOMS, NEWCASTLE-ON-TYNE.—DESIGNS FOR THE SHEFFIELD MUNICIPAL BUILDINGS.—RUNKERRY, CO. ANTRIM. — PLUSCARDYN PRIORY, ELGIN. — LIME-TREE WALK, SEVENOAKS.—NEW PREMISES FOR MESSRS. GRIFFITH AND FARRAN.—ALTERATIONS TO A SUMMER COTTAGE.—KETTERN STEG, NUREMBERG.

Our Illustrations.

CONTEMPORARY BRITISH ARCHITECTS.

(See description on p. 166.)

NEW LABORATORIES AND WARE-ROOMS, NEWCASTLE-UPON-TYNE.

These buildings are now in course of erection for Messrs. Brady and Martin, wholesale and manufacturing chemists, on land situated in Northumberland-road. They comprise in the main building shown in front a large cellar in the basement, on the next floor the extensive offices of the firm and clerks, and a show-room of the various products manufactured by the firm. The two floors above will be devoted to the ordinary routine work of wholesale druggists. At the back the chief building will comprise drug mills, and a large laboratory fitted with the most approved machinery and appliances for the manufacture of pharmaceutical preparations on a large scale. The various retail departments of Messrs. Brady and Martin will still be carried on at 27, 29, and 31, Mosley-street, where the firm occupy one of the most artistic buildings in the city. The walls of the new premises are of brickwork throughout, the front towards the street being faced with red pressed bricks from Ditchling in Sussex; the dressings to the front elevation are in Kenton stone, polished. The contractors for the building are Messrs. R. and J. Lowry, Newcastle. The designs are by Mr. Lister Newcombe, F.R.I.B.A., of Newcastle, and the total cost will be between £8,000 and £9,000.

SHEFFIELD MUNICIPAL BUILDINGS.

Last week we completed the illustration of the six perspectives and plans of the two principal floors of the selected final designs for these buildings, including the one which is to be carried out. We also gave the elevations of Mr. Tulloch's design, because of its merit in detail. To-day, for the same reason, we reproduce the main façade of Messrs. William Harvey and Smith's design facing Pinstone-street. The description of their design was printed with the perspective last week.

RUNKERRY, BUSHMILLS, CO. ANTRIM.

This house is the residence of the Right Hon. Lord Macnaghten. It commands extensive views of the North of Ireland Coast, and is within a short distance of the celebrated Giants' Causeway. The buildings were carried out by Messrs. James Henry and Sons, from designs by Mr. Samuel P. Close, F.R.I.A.I., Belfast, who prepared the drawing which we reproduce to-day. It was exhibited in a recent exhibition of the Royal Hibernian Academy at Dublin.

PLUSCARDYN PRIORY, ELGINSHIRE, N.B. (ROYAL INSTITUTE OF BRITISH ARCHITECTS' SILVER MEDAL DRAWINGS, 1890.)

In the Building News for April 4th this year we gave two double-page plates from this same series of prize drawings by Mr. Alexander Mackintosh, with his description of the buildings illustrated. To-day we complete the series by a further sheet of geometrical sections and a view.

LIME TREE-WALK, SEVENOAKS.

The street of cottages at Lime Tree-walk, Sevenoaks, of which we give an illustration to-day, were designed to remedy the growing want of houses for artisans and labourers caused by the high price of land in that neighbourhood and the restrictive covenants put upon all that was brought into the market for building purposes, which prohibited the erection of any house less than a villa. The consequence of this prohibition was that while many attractive cottages with garden plots were pulled down for the sake of their sites, none were built to replace them except on a crowded site at an inconvenient distance from the town, in a most unattractive position, where a poor quarter rapidly sprang up with all its attendant disadvantages. Fortunately it was possible to secure a field free from restrictive covenants close to the centre of the town, and commanding lovely views over Kippington Park and the Holmesdale valley. Here a road was formed, and 24 cottages were built, containing a kitchen, parlour, and, with two exceptions, three bedrooms apiece. Each has a small plot for flowers in front, and a small piece of ground at the back. They are built of concrete, with red brick dressings and red tiled roofs, and the dark-brown ironstones dug on the site have been used in the arches over the porches and in the columns under the outer gallery of two sets of cottages which occupy an upper floor. Near the entrance to the new street is a coffee-house, which goes by the name of the "Lime Tree," containing a large room, 40ft. by 20ft., suitable for public entertainments and private parties, a large bar and reading-room, and a considerable number of bedrooms for visitors. Attached to the coffee-house is a garden and stabling. It is well frequented in the spring and summer by pleasure parties and school excursions, as well as by regular customers. The ground was laid out and the buildings were designed by Mr. T. G. Jackson, M.A., architect, and the work was carried out by workmen employed under the direction of his clerk of works, Mr. E. Long.

The London County Council rejected on Tuesday the recommendations that they should undertake, as Metropolitan improvements, the widening of Knightsbridge, near Albert Gate, and of that part of the Albert Embankment formerly called High-street, Vauxhall, except on condition that the parishes of Kensington and Lambeth should contribute in each case one-fourth of the cost. The Camberwell Vestry propose the purchase of 48 acres of land near Peckham Rye, to be added to the common. The purchase money required was £50,925, and towards this £32,000 had been promised—£12,000 by the Charity Commissioners, and £20,000 from the Camberwell Vestry. It was decided that the Council should conditionally contribute the balance, not to exceed £18,000.

The new National Museum and Library Buildings in Kildare-street, Dublin, will be opened by the Lord Lieutenant of Ireland on the 29th inst. They have been built from the designs of Messrs. T. Newnham Deane and Son, of Dublin, who were successful in the final competition, and have been illustrated in our issues of Oct. 31, Nov. 14 and 28, 1884. The style is that of Sansovino's Library at Venice.

St. Cuthbert's Roman Catholic chapel at Gorgie, near Edinburgh, was opened on Sunday. The building, which will serve the double purpose of school and chapel, pending the erection of a church upon another part of the site, is of simple Gothic design. The sanctuary has been richly decorated internally in colours and gold. The building is seated for a congregation of 250, can accommodate 160 school-children, and has cost about £800. It, along with a presbytery on the same site, has been erected from the designs of Mr. J. B. Bennet, of Messrs. Buchanan and Bennet, 24, George-street, Edinburgh.

The First Commissioner of her Majesty's Works announces that in future the words "which must be verified by the persons desirous of tendering" will be omitted in the Board's advertisements for tenders for building works.

COMPETITIONS.

Bermondsey Free Library.—We have good reason to believe that the final award made by the committee in this competition was not in accordance with the report of the professional assessor, Mr. George Elkington, F.R.I.B.A., neither were the premiums conferred as he advised. The committee reserved the right of making their own selection, and, acting upon this clause, their ultimate choice was determined in favour of Mr. Johnson's plan. This decision has been this week ratified, and this design will be carried out, though thus far the consent of the Vestry for the erection of windows on the return front has not actually been obtained. The conditions of the competition provided that there should be no windows on this elevation.

Fleur le Lis, Wales.—Five architects sent in designs for a new church at Fleur de Lis to seat 300, at a cost of not more than £1,500, and the plan by Mr. E. A. Johnson, of Abergavenny, has been chosen by the Trustees of the Gelligaer Lectureship Endowment at their meeting last week.

CHIPS.

A contract for a mission church in connection with St. James's Church, Moss Side, Manchester, has been accepted by the committee, and the work commenced. The outlay will be about £500. Mr. Geo. Macfarlane is the contractor for the works, and the drawings have been prepared by Mr. John Lowe, architect, of Manchester, under whose superintendence the parish church was recently erected.

The Society of Antiquaries of London has struck a medal of Mr. Charles Roach Smith, in recognition of his life-long services to archæology. This is the first instance of such an honour being accorded to a fellow of the society, and a surplus of over 100 guineas accompanies the medal.

The Duke of Edinburgh, who was accompanied by the Duchess, presented the prizes at the Ryde School of Art on Monday.

The Amphitryon Club and Aouste's Restaurant are about to be housed in premises in Albemarle and Stafford streets, W., which are being rearranged by Messrs. J. W. Shillitoe and Son, of Bury-St.-Edmunds, from plans by Mr. John W. Rhodes, of Clifford's Inn. The decorations will be executed by M. Meilliers, of Margaret-street, W., under the architect's superintendence.

The second excursion of the archæological section of the Birmingham and Midland Institute took place on Friday in last week, when Melbourne Hall and Church, Derbyshire, and Ashby-de-la-Zouch Castle and Church were visited, Mr. J. Cotton acting as guide.

The alterations and enlargement of St. Margaret's National Schools, Whalley Range, Manchester, have been commenced, in accordance with plans, &c., approved by the Education Department, by Messrs. R. Neill and Sons, builders, of Manchester: cost about £1,100, under the superintendence of the architect, Mr. John Lowe, of Manchester.

A Select Committee of the House of Commons, presided over by Mr. Woodall, passed the Bill incorporating a company with powers to construct a circular "subway railway" around Glasgow. The total length of this line will be over six miles, and the share and loan capital authorised is £937,500. This scheme has now been sanctioned by both Houses.

A new Roman Catholic Church at Burnham, Somerset, adjoining a convent of French nuns, has just been opened. It has been built from designs by the Rev. A. J. C. Scholes, of Bridgwater.

Plans have been prepared by Messrs. L. and J. Falconer, architects, Blairgowrie, for the erection at Clayquhat, Bridge of Cally, Perthshire, of a new Free Church. The plans show a Gothic erection seated for 200, with vestry and heating chamber.

Two elaborate memorial windows have just been placed in Delph-hill Chapel, Bolton, illustrating the texts, "Suffer Little Children" and "Feed My Sheep." The work was painted in St. Peter's Studio, Manchester, by Mr. W. G. Sutherland.

A new Primitive Methodist church, with schools underneath, is in course of erection at Congleton, from the designs of Mr. A. Tomkinson, architect, of Tunstall. The building, with fittings, will cost about £200. Mr. John Worrall, of Congleton, is the contractor.

The contract for the erection of the lecture-hall and schools connected with Withington Congregational Church has been accepted, and the work begun by Messrs. Southern and Sons, contractors, of Salford, involving an outlay of about £2,000, under the superintendence of Mr. John Lowe, architect, of Manchester.



ALTERATIONS AND ADDITIONS TO COTTAGE AT HURLEY.

ORIGINALLY two cottages—one at back, and adjoining that shown in small sketch—this house is beautifully situated at Hurley-on-Thames, overlooking General Owen Williams's park, being used as a summer boating residence. The alterations shown were carried out last winter, when the interior was largely remodelled. There were three entrances, one being done away with and thrown, with the two front rooms, into one large dining-room, now 22ft. 6in. by 14ft., without the bays. A good entrance-hall was formed, and porch added. In addition, the accommodation consists of drawing-room, large lobby, and six bedrooms. The new stoves and wooden mantels have been supplied by Messrs. Barnard Bishop. The oak fences and gates were from Messrs. Taylor and Brooking, of Dorking, the general work being carried out in the best possible manner by Mr. Y. J. Lovell, of Great Marlow, from plans by Mr. Spencer W. Grant, A.R.I.B.A., of 63, Finsbury-pavement, E.C.

ARCHÆOLOGICAL.

Explorations at Strata Marcella.—The first week's excavations on the site of the Montgomeryshire Abbey of Strata Marcella have been very successful and satisfactory. Mr. Charles Jones, F.S.A., had consulted Mr. Stephen Williams, F.R.I.B.A., Rhayader, who has charge of the excavations at Strata Florida. The site of Strata Marcella was indicated by the fact that some land near the Abbey Bank at Pool Quay was tithe free. The abbey was built in the 12th century. The first impetus given to the proposal to explore the site was the finding amongst the material which formed the weir in the Severn not far away of a beautiful floriated carved stone, which had evidently been the capital of an Early English column. Foundations of several walls ave been found, including those of the choir of the monastic church. To the north of the chancel trenches have been dug, and have disclosed a flagged space extending for 24ft. north and 25ft. west. The flags are in a good state of preservation, and one of them is 6ft. square. At the north of this space a skull and nearly a complete skeleton were found, and a large number of bones have been exhumed. Other discoveries include fragments of window tracery, odd pieces of iron, lead, and pottery, and many chips of stained glass. Some of the pavement tiles are of the same pattern as some found at Strata Florida.

The parish church of Bromfield, near Ludlow, was reopened on Thursday, the 24th July, after restoration. The oak roofs have been repaired, the walls panelled, and the church reseated with open seats of oak. A brass eagle lectern has been placed in the chancel. Stained-glass windows have been presented by the Bishop of Melanesia and two other donors. At the entrance of the churchyard a lych-gate of oak has been erected by Mrs. Selwyn, the vicar's mother, in memory of her husband, George Augustus Selwyn, Bishop of New Zealand. The cost of the work, exclusive of the special gifts, has been nearly £3,500. The walls have been re-cast at a cost of a hundred guineas. The work has been carried out by Mr. J. Grosvenor, of Ludlow, from designs by Mr. C. Hodgson Fowler, F.S.A., of Durham.

At the last meeting of the Bath school board it was agreed to invite the whole of the Bath architects to send in competitive designs for the new girls' and infants' school, which it is proposed to erect in Lower Bristol-road.

At a meeting of persons interested in a scheme for providing dwellings for the labouring classes in Manchester and Salford, held on Friday, it was decided to form a joint-stock company to be called "The Manchester and Salford Dwellings Corporation, Limited," with a capital of £250,000 in £5 shares. Plans were produced by Mr. J. Corbett of the suggested class of block of dwellings, and were referred to the committee.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Exeter.—The architects of this city have recently formed an Architectural Association with the following as officers for the ensuing year: President, Mr. John Hayward; Vice-president, Mr. R. Medley Fulford. Council: Messrs. J. Crocker, E. H. Harbottle, J. Jerman and J. M. Pinn. Hon. Sec.: Mr. E. G. Warren.

CHIPS.

Mr. E. H. Shorland, of Manchester, has just supplied his patent warm-air ventilating Manchester grates to St. Agnes Schools, Birch-in-Rusholme, near Manchester.

The South Wales Manure Company intend erecting temporary slaughter-houses and stables at Cardiff, from plans by Mr. Charles C. Jones, Cardiff.

Memorial stones were laid on the 21st inst., at Cockshutt, Salop, of a Primitive Methodist church and school, to cost about £700. The building will be of a Gothic character, with Ruabon red brick facings and Grinsill stone dressings. The plans have been prepared by Mr. A. Tomkinson, architect, Tunstall, and the contractors are Mr. J. Wood and Son, of Willaston.

A new Roman Catholic church is in course of erection at Aughrim, from plans by Mr. W. Hague of Dublin. It is Early Gothic in style, consisting of a nave and chancel, the outside dimensions being 100ft. by 32ft. The walls and dressings are of local granite, and the roofs of pitch-pine.

The death is announced of Mr. John Wray, for the past eighteen years borough surveyor and engineer to the town commissioners of Enniskillen, and for nearly forty years assistant county surveyor for Fermanagh.

An extensive roller floor mill is about to be built at the East Bute Docks, near Cardiff, at an outlay of about £30,000. Mr. S. Rooney, of Cardiff, is the architect, and Messrs. W. Thomas and Co., of the same town, are the contractors.



NOS. 13 AND 14, CHARING CROSS ROAD.

THESE premises, which are situate at the corner of Denmark-street and Charing Cross-road, have recently been erected for Mr. J. Tongue by Messrs. Patman and Fotheringham.

Two stained-glass windows, executed by Messrs. William Morris and Co., of Merton Abbey, have this week been placed in the western ends of the north and south aisles of Leigh parish church. They were drawn by Mr. E. Burne-Jones, A.R.A., and present "Prayer" and "Praise," being the last of a series of seven windows executed by the same firm. The figures in the lower lights of the "Prayer" window are Enoch and Elijah; in those of the "Praise" window, David and Solomon; while in the upper lights of each window a path appears and reappears leading upward, fenced and protected by angels, who are also looking upward. The tracery at the top is filled with the figure of an angel and sapphire templates.

The local board of Knaresborough adopted on Monday plans and a scheme prepared by M. Baldwin, of Houghton-le Spring, for dealing with the sewage from both sides of the town on land near Grimbald Bridge, where it would be used for irrigation. The estimated outlay is £8,000; but at present only the first section of the scheme, dealing with the eastern, or most thickly populated part of Knaresborough, will be carried out.

The town council of Newcastle-on-Tyne have, by a large majority, rejected a committee's plans for altering the present inadequate Town Hall and Municipal Offices, and decided to make only temporary changes at the existing buildings, referring to a committee the question of providing a new town hall on a site yet to be defined.

BUILDERS' BENEVOLENT INSTITUTION.

THE forty-third annual meeting of this institution took place on Thursday, the 24th July, at 4, Vernon-place, Bloomsbury-square, W.C. Mr. George Plucknett, J.P. (hon. treasurer), occupied the chair in the unavoidable absence of Mr. J. W. Hobbs, J.P. (president). The report was read, in which the committee congratulated the subscribers on the circumstance that the income from all sources had been sufficient to meet the necessary expenditure of the year. This gave great satisfaction to the committee, and they desired to express their hearty thanks to Mr. J. W. Hobbs, J.P., for his able advocacy of the claims of the Institution, whereby the charity was substantially benefited. Whilst acknowledging with gratitude the success which had thus been achieved, the committee hopefully trusted that the subscribers would not relax in their annual support of the Institution, as only by persevering and united help of its well-wishers could it be made to prosper and to be continuous in effecting the good it is doing. In the year there have been four deaths of pensioners. One man and one woman had been elected by the Institute of Builders, in accordance with the terms agreed upon by the Institute and the committee. The committee, with much regret, had to report the death of Sir Samuel Morton Peto, Bart., who was a trustee and a munificent contributor to the institution. He was president so far back as the year 1852. Mr. Frederick John Dove has been appointed a trustee in the place of the deceased baronet. The annual ball realised a profit of £55 5s. The annual dinner will take place, with the consent of the Worshipful Company of Carpenters, at their hall, on Thursday, 6th November, when Mr. William Shepherd, who has kindly accepted the position of president of the institution for the ensuing year, will preside.

The CHAIRMAN moved the adoption of the report.

Mr. THOMAS STIRLING seconded the resolution, which was unanimously agreed to.

Cordial votes of thanks were passed to the president, the vice-presidents, trustees, treasurer, committee, and auditors.

The CHAIRMAN next proposed that Mr. William Shepherd be the president for the ensuing year.

Mr. CHARLES RUSSELL seconded the resolution, which was cordially adopted.

A hearty vote of thanks was then accorded to Mr. Plucknett for presiding, and the proceedings terminated.

The bronze Jubilee statue of the Queen at Winchester—one of the best known works by Mr. Alfred Gilbert, A.R.A.—has been unfortunately located from the first, and now it is undergoing a removal to a corner close to the windows of the County Council offices. When unveiled by the Princess Louise, the statue was placed in advance of the great entrance to the County Hall, but its appearance was marred by the low base on which it rested. Now the authorities are elevating and enlarging the base, but putting the whole work into the corner.

The County Council of Stirling have decided to divide the jurisdiction into three districts for county surveyors, and to offer a salary of £225 a year for the most important of these, the eastern one, and £200 for each of the other two.

WAYSIDE NOTES.

HE Watkin Tower scheme has latterly been somewhat modest and retiring. Until the ent announcement that Sir Benjamin Baker s appointed engineer to the Tower Company, le was known as to the intention of the pro- ers, although certain rumours as to a site near rrow were abroad. Towards the end of last ek, however, some particulars as to the pro- ed position, &c., of the tower were given ing the course of an address by Sir Edward itkin to the shareholders of the Metropolitan ilway Company, at their half-yearly meeting. would appear, therefore, that the Metro- itan Company and the Tower Company, ough not in reality one and the same concern, y, for all practical purposes, be in future ognised as closely allied; for they have one l the same chairman, who, on the strength of readiness to "put a little of his money into Tower," advises shareholders in the railway do likewise. Moreover, it seems that with a w of accommodating the Tower Company the lway directors have purchased 28 acres of ound at Wembley Park, "ten minutes by press. train from Baker-street Station"; and Tower people have under their consideration question of using this site to erect their glish Eiffel, with a new station to be placed nveniently on the spot.

Also, Sir Edward proceeded to lay on the rose- our to the proposed structure, justifying nself possibly by the fact that the Eiffel iron- rk was of a ruddy hue. Otherwise, I do not how, from a financial point of view, com- risons can be made between the success of the wer in the centre of Paris, inaugurated, too, the time of a world's fair of unparalleled lendour and extent, and a similar structure, en minutes by express train from a metro- litan railway station," remarkable chiefly for sulphurous atmosphere, and only fashionable the Eton *v.* Harrow day. But these financial nsiderations do not greatly concern ourselves, d I would gladly abandon any hostile attitude therto shown in these columns, since now the wer is to be sufficiently far removed from the etropolis to prevent its becoming an intolerable d over-bearing eyesore. Although from ints of view elevated above the average ane of London chimney-pots, such as the acus of the Monument, the Stone and olden galleries of St. Paul's, and the summit Bow steeple, and less breezy elevations even an these, we may, at times, be able to e the iron monster breaking the distant rizon, he yet will not peer down into un- pected nooks and crannies, as he would have ne had a central site been selected. We may, erefore, now regard the proposed tower scheme a harmless adventure, providing we hold no ares in the concern, and may interest ourselves its progress and development. Unfortunately, e are at present much in the dark as to proposed tentions. I would imagine, however, that Sir enjamin Baker is to take in hand the design aced first in that memorable, nightmare-like mpetition, and to carry it into execution. his would certainly be rather hard on the de- gners; but I believe there was nothing stated the instructions to competitors as to the carry- g out of the design, and it is equally certain at it would not be easy to name a better man r the work in hand than Sir Benjamin de orth Bridge. Considering the nature of his ex- rience, we may safely conclude that—financial rangements going smoothly—the commence- ent of the tower will be tantamount to its mpletion.

In country districts the relative cost of site and ilding will rarely bear any comparison: so it ften happens in the heart of the City of London, aly here it is all the other way about. The orks to be done in the enlargement of Liverpool- reet Station, I learn from the G.E.R. Com- any's meeting, will cost between £300,000 and 400,000. The land required will cost the com- any no less than £700,000. The example may ot be so fair as it might, possibly, because in ne extension of the station it may be that much f the land required will merely be metalled and ft uncovered by buildings; at the same time ne figures are instructive, and give an idea of ne value of land on the east side of the present ation buildings.

The additions to the Great Eastern Railway Company's terminus are to be executed with despatch. They have only recently commenced work on the proposed extensions, yet Mr. C. H. Parkes, the chairman of the company, states that they hoped to be able to utilise some portions of the new buildings for the suburban traffic by the end of August. The new accommodation will be a great relief to the station, especially as regards the main line platforms, at present too small and ill-adapted for the purposes they have to serve. When complete, there will be six lines of rail *into* Liverpool-street Station, a fact that will do away with the necessity, as at present existing, and contrary to first principles of railway engineering, for trains entering the station to cross one another's road. In connection with the station improvements will be the enlargement of the Liverpool-street Hotel; and not the least noteworthy of Mr. Parkes' statements, with reference to the future of the Company's terminus, is that referring to the increased facilities for providing for the accommodation of the working classes. In facilitating a solution of a problem, to which I recently referred—viz., the rehousing of poor people turned out of their homes by improvement schemes, the Great Eastern Railway Company has done much good work. It issues tickets at such nominal rates as to enable the most poorly-paid artisan or operative to reside in the open country instead of the slums and rookeries of London. The easy hours of the modern British working man should enable immense numbers to avail themselves of these facilities; and, from the G.E.R. Chairman's remarks, I imagine that they *have* been thus appreciated, and to such an extent as to need additional and special provisions for the traffic.

It is a little unfortunate that the most desirable of the Metropolitan improvements proposed by a committee of the County Council should not have been agreed to by the Council. Between St. Mary Abbott's and Kensington Court there is a restricted thoroughfare that must appear to the least observant eye out of keeping with the surroundings, and wholly inadequate for the daily traffic east and west. The Metropolitan Board of Works failed to remedy the defect, and now the County Council have not arrived at any decision in the matter. In this case, however, one cannot blame the Council, for it seems that it is the Kensington Vestry that is at fault. That close-fisted corporation would like to have all the fun of the fair, and no paying. In all the other improvements arranged by the London County Council, the local authorities have agreed to pay from one-quarter to one-half of the expenses entailed. Not so the Kensington Vestry, which refuses to contribute anything to the proposed widening of the great highway through this district. Whilst arguing that the improvement would be for the benefit of the community in general rather than for their own district, they must know well enough that it would enhance the values of the adjoining neighbourhood, and generally promote the welfare of Kensington. In throwing over the whole matter, therefore, the County Council have done wisely. It is a pity, indeed, that the Council cannot in some way compel the Kensington Vestry to pay the moderate demand made; for the narrow roadway hinders traffic, and thus becomes a public nuisance which the local authorities should be made to remove. For the present the Council does well in leaving the selfish vestry to itself.

There is now a good chance that matters relating to line of frontage, hitherto the cause of so much unpleasantness, may be future progress more smoothly. Under Clauses 30 to 41, in the London County Council Bill, appeal will be allowed against the decision of the superintending architect to a tribunal consisting of one member appointed by the County Council, one by the Council of the Royal Institute of British Architects, and one by the Council of the Institution of Surveyors. On Tuesday last, at the continued consideration of the L.C.C. Bill by a committee of the House of Lords, Mr. Henry Currey was examined as to the desirability of the proposed tribunal of appeal, and stated that he considered it advisable that there should be an appeal against the decision of the superintending architect as to the general line of building, and that the tribunal of appeal proposed by the Bill was a satisfactory one. All architects will agree with Mr. Currey as to the usefulness of the proposed tribunal. It should constitute a safeguard against the many disagreements, heart-burnings, and annoyances caused by questions of frontage. The Bill, as most persons will be aware, is not yet law, but it is going on that way, the chairman of the committee announcing on Tuesday that the consideration of the clauses dealing with the question of appeal against decisions as to frontage, and other matters touching building legislation, would be proceeded with.

Judging by the aspect of your correspondence columns last week, the competition world is in anything but a contented frame of mind. I fear that so long as competitions remain there will be complaints, for where there is not genuine cause for complaint—in the one instance out of six—competitors imagine grievances. Mr. Duffield's complaint, however, is, so far as I can gather, more than usually justified by the facts of the case. Readers may remember what I said as to the upshot of the West Hartlepool Brewery Competition, about as abominable as can well be imagined, if the information vouchsafed me was correct. "X. Y. Z." has a grievance if his facts are as stated, and one that he shares with other competitors. But it appears to be the old question—If in a competition the promoters find a plan disregarding conditions, but more to their taste, are they to refrain from adopting it? It is to be feared, whilst human nature remains as at present constituted, that the answer must be in the negative, hard as it may seem to the other competitors. A somewhat similar principle may be applied in Messrs. C. O. Ellison and Son's case, though that firm have some cause to complain of what appears to be a new-born drawback to dual competitions. At the same time, if by the action taken the Harrogate Town Council finally got a more complete design than if they had acted as your correspondents would have desired, is it to be expected that they would have followed the latter course? I fear in this world that the hope is vain. In the near future competitions may be differently conducted, but at present I am afraid that there are many little imperfections from which competitors must suffer, actually or in imagination, and that architects must recognise this or leave competitions to others who agree to put up with a certain amount of chance-dealing. None the less should we constantly strive to blot out these defects in the competition system. GOTH.

CHIPS.

The local board of Burnham, Somerset, have appointed Mr. Robt. A. Wilson as their surveyor, waterworks manager, and inspector of nuisances, in succession to Mr. John H. Palmer, resigned. Mr. Wilson has been assistant to Mr. Palmer for some years, practically carrying out all the duties of above appointment. There were twenty-five applications, and the person appointed is allowed to practise as an architect and civil engineer within a radius of ten miles from Burnham.

The Royal Ophthalmic Hospital, of which the foundation-stone was laid by the Prince of Wales on Thursday in last week, is being rebuilt from designs by Mr. Keith D. Young.

According to the Allahabad *Pioneer*, the largest reservoir or artificial lake in the world is the great tank of Dhebar, 20 miles south-east of Udaipur, Rajpootana, which covers an area of 21 square miles. The masonry dam is 1,000ft. long by 95ft. high, 50ft. wide at the base, and 15ft. at the top.

Among the dissolutions of partnership announced in Friday's *Gazette* are those of Chambers and Roberts, Lowestoft and Cannon-street, City, architects; and F. and H. Francis and Sons, Old Broad-street, City, architects and surveyors, as far as regards R. F. C. Francis.

Mr. William Stringfellow, A.M.I.C.E., for the last four years assistant borough surveyor of Southampton, has been appointed assistant borough and water engineer of Cheltenham.

The memorial stone of a new chancel for St. Thomas's parish church, St. Helen's, Lancs, was laid on the 24th July. In addition to the chancel, the scheme includes the erection of several vestries, an organ chamber, heating apparatus, &c., and the contract, for £2,800, has been taken by Colonel Rothwell, of St. Helen's. The work is being carried out from plans and designs prepared by Messrs. Aldridge and Deacon, of Liverpool, and will be completed in March next.

On Saturday morning a destructive fire broke out at 6, Orange-street, Red Lion-square, W.C., on the premises of Mr. J. T. Bassano, plumber, and resulted in the destruction of the entire premises.

CONTEMPORARY BRITISH ARCHITECTS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

THIS double-page assemblage forms the eighteenth group of portraits given in the BUILDING NEWS of living British architects in this series since the commencement of the year. The first photograph on the sheet is that of Mr. George Corson, of Leeds, who was articled to the late Walter Newall, of Dumfries, an architect of large practice in the south of Scotland, and who contributed many drawings and specifications of executed works to Loudon's "Encyclopædia of Architecture." Mr. Corson has had an extensive practice in Leeds and its district for many years. The Municipal Buildings, Free Library, and School Board Offices were built some years ago from his designs at a cost of about £100,000, and the Grand Theatre at a cost of over £60,000 for land and buildings. He is now engaged upon a large extension of the Leeds General Infirmary, and the following are among his past works:—The Leeds Medical School in Park-street, 1864; in Park-row, Leeds, the offices of the Scottish Widows' Fund, and business premises for Mr. A. Ramsden and Messrs. Headland; in Wellington-street, warehouses for Messrs. Sykes, Cooper (two), Lupton (following one by W. R. Corson, of Manchester), and Ledgard (three); in Commercial-street, business premises for Messrs. Harvey and Reynolds; in East Parade, auction rooms for Hepper and Sons, and for the same firm a horse and carriage repository and auction rooms in York-place and Park-place; for the Leeds Infirmary, nurses' house and other works; the brewery of Messrs. J. Tetley and Son almost entirely reconstructed; a mansion for the late F. W. Tetley, at Foxhill, near Leeds, and another at Spenfield for J. W. Oxley, banker; St. Clement's, St. Silas', and St. Edmund's churches; parsonages for these and for St. Simon's, and schools for St. Silas' and St. Mark's; board schools at Bewerley-street (the first under the Act), and Green-lane, Leeds, and at Pateley Bridge, and a house for Mr. Ingleby at the latter place; at Bradford, a warehouse in Scotch Baronial style for Mr. Walter Dunlop; at Ripon, extensive additions to the grammar-school, and schools at Hampsthwaite; at Headingley, his own residence, Dunearn, St. Michael's Mount, St. Ives, the Parish Institute, and the cemetery, chapels, and lodge at Lawn's Wood; and a number of other houses in the neighbourhood of Leeds, and additions to others. In competitions, besides the buildings carried out, he obtained the first prize of 750 guineas in the first competition for the Glasgow Municipal Buildings—this was not proceeded with, however, owing to the action of the assessor, Mr. Charles Barry, who advised the Corporation privately that the proposed expenditure ought to be increased from £150,000 to £250,000; the first prize of 300 guineas for designs for laying out Roundhay Park for the Leeds Corporation, which, however, was not carried out, the little that was done being intrusted to the borough surveyor; the second premium for the Leeds Royal Exchange, the third premium for Nottingham Municipal Buildings, and the second for Burnley. He has also acted as assessor in several competitions, quite recently in that for the Montpellier Baths at Harrogate. Mr. Corson was the first president of the Leeds Architectural Society. The portrait given is by Mr. Donald McIver, of Leeds.

Mr. James Lewis Thomas is a native of South Wales, and was educated at Christ's College, Brecon, and King's College, London. After finishing his articles in Wales he was for some time in the office of Messrs. Grissell and Peto at the Houses of Parliament to learn measuring. In 1844 he was appointed by the Master-General of the Ordnance to the Royal Engineer Department, and was employed at the Tower of London under F.M. Sir Linton Simmons, R.E., in superintending the erection of the Waterloo Barracks, designing the officers' quarters, and restoring the old towers in the Ballium Wall, for which the experience gained at the Houses of Parliament eminently qualified him. He then served from 1848 to 1854 in the West Indies, and while quartered in Antigua was appointed Colonial Architect by Governor Mackintosh with the consent of the Master-General of the Ordnance, for the purpose of restoring the public buildings and churches destroyed in a disastrous earthquake and hurricane. On returning to England in 1855, during the Crimean War, he was appointed permanently to the War Office as deputy surveyor, and in that capacity designed the Royal Victoria Hospital, Netley, and had the honour of exhibiting his drawing of the buildings in bird's-eye perspective to the Queen on the occasion of her Majesty laying the foundation-stone on the 19th May, 1856. The Permanent Barracks at Aldershot were also designed by Mr. Thomas, as well as the Royal Pavilion, on which occasion he was honoured with the personal advice of the late Prince Consort. During his long service at the War Office many other important public works too numerous to mention in all parts of the United Kingdom and abroad were designed by Mr. Thomas. The Memorial Convalescent Cottage Home at Bournemouth, erected to the memory of the late Lord Herbert of Lea, who during his presidency at the War Office as Secretary of State was conspicuous for his devotion to the comfort of the soldier and as the great pioneer of sanitary reform, was also designed by Mr. Thomas and presented to the committee as a tribute of respectful regard for the memory of his revered chief. In the progress of this work Mr. Thomas had the benefit of Miss Florence Nightingale's advice, who afterwards selected that design to illustrate one of her works on hospital construction. In 1882 Mr. Childers, the Secretary of State for War, appointed Mr. Thomas Chief Surveyor of the War Department, which appointment he now holds. He was elected a Fellow of the Royal Geographical Society in 1872; Fellow of the Society of Antiquaries in 1879; Fellow of the Royal Archæological Society in 1880; Fellow of the Royal Colonial Society, and Member of the Society of Arts. In Freemasonry, Mr. Thomas is a Past Grand Officer in the United Grand Lodge of England since 1878. In 1851 he was married to the eldest daughter and co-heiress of the Hon. Henry Cecil Hodges, nephew of the first Marquess of Exeter, by whom he has several sons. The portrait is by the London Stereoscopic Company.

Mr. Wm. Landless, architect to the Leeds School Board, had the advantage of being trained in the office of his uncle—Mr. Burnet, of Glasgow—who for many years has carried on an extensive practice in the city of Glasgow and throughout the West of Scotland. Mr. Landless was born in 1847, and commenced business on his own account about the year 1873. It was at this time that the Tramway Act became law, and Mr. Landless was largely employed by the Directorate. He has also accomplished a variety of work in and around Glasgow, both for commercial and domestic purposes, his principal building, and the one by which he is best known, being the Glasgow Asylum for the Blind, opened by Lord Rosebery; a large structure designed in the Scottish Baronial style, situate to the north of the cathedral and distinguished by its hexagonal tower and spire. Mr. Landless was latterly occupied in the building of schools, and has carried out some of the schools erected by the Glasgow Board; he has also been employed by the Govan School Board, having erected for that body the large school situate on the lands of Partick-hill, which was opened by the late Mr. Craig-Sellar, M.P. Mr. Landless's connection with school boards and his experience gained thereby led to his present appointment in 1889 under the Leeds School Board, to which body he had previously rendered preliminary services. He has at the present time four new schools on hand, as well as additions to older ones. Mr. Landless held the office of hon. treasurer to the Glasgow Institute of Architects for some years, and was vice-president, and subsequently president, of the Architectural Section of the Philosophical Society of Glasgow. The portrait is from a photograph by Messrs. Wormald, of Leeds.

Prof. T. Hayter Lewis, F.S.A., was born on 9th July, 1818. He was articled pupil to the late Mr. Joseph Parkinson, of Sackville-street, Piccadilly, in 1837 was admitted as a student of the Royal Academy, and in 1839 won a silver medal of the R.A. in the class of Architecture. Afterwards he entered the office of Sir William (then Mr.) Tite, and travelled in France, Germany, Italy, Sicily, and Greece in company, for the most part, with Mr. Ewan Christian and the late Sir Horace Jones. A large number of his sketches then made were published in various numbers of the Architectural Publication Society's "Dictionary." Soon after his return he entered into partnership with Mr. T. Finden, brother of the well-known engraver. In 1860 he succeed Sir M. Digby Wyatt as hon. sec. to the R.I.B. and on resigning that office was elected one the vice-presidents. In 1864 he was appoin as one of the examiners (at first in conjunct with the late Sir G. G. Scott and Art Ashpitel) in the voluntary examination of Institute. In 1865 he was elected Profes of Architecture and Construction at Univers College, where, in 1871, he acted as Dean of Faculty of Arts. In subsequent years he ag travelled in Germany, Italy, Greece, Alge Egypt, Palestine, &c., papers by him relat to these countries being included in the *Trans tions* of the R.I.B.A., Biblical and Brit Archæological, and other societies. He design at various times, the Alhambra (originally b for a scientific society), the north and south si of the intended quadrangle to University Colle the schools and other extensive buildings o nected with them, many buildings for private public use in London, and mansions in vari parts of the country; but in 1869, owing severe illness, gave up the greater part of practice. In 1881 he resigned his professorsl at University College (having on two separ occasions obtained leave of absence owing continued illness), and was then elected Emeri Professor. He is the author (in addition various detached essays) of the articles "Ancient and Modern Architecture" in the n edition of the "Encyclopædia Britannica" (Mediæval portion being written by the late G. Street, R.A.), and of the annual review of arc tecture in the "Companion to the Almanac" 1885, 1886, and 1887, when he resigned, owi to his absence abroad. With Colonel Sir C. Wilson he annotated Mr. Aubrey Stewar translation of Procopius on Justinian Buildin and in 1888 wrote "The Holy Places of Je salem," published by Mr. John Murray. P fessor Lewis is one of the executive commit of the Palestine Exploration Fund, and also the Egyptian Exploration Fund and ot societies. His photograph was taken this y in Jerusalem by Mr. G. Krikorian, of that cit

Mr. Thomas Chambers Hine, F.S.A., was architect to the Nottingham Castle Museum a Gallery of Art, and originator of the proje In addition to most of the works enumerated the number of this periodical of January 1 last as executed in conjunction with his s Mr. G. T. Hine, Mr. Hine, sen., was previou concerned as architect in works mainly consist of the Great Northern Station at Nottingh and the buildings on that line between Notti ham and Grantham, three of the Nottingh churches, the General Hospital, and Corn change, and some thirty of the principal wa houses and factories connected with the lace hosiery manufacture in this town; the erect or restoration of between thirty and forty pa churches in the Midland Counties, and on Ireland, various parsonage houses and school connection therewith; numerous domestic other buildings in Nottingham, Liverp Newark, Grantham, and Peterborough; Bentinck Memorial, Mansfield; Broughton H near Manchester; Cranfield Court, in Bedfo shire; and the partial rebuilding of Appl Hall, Leicestershire; Ogston Hall, Derbysh and Flintham and Gonalstone Halls in Notti hamshire; also, since 1854, the laying-ou the Nottingham Park estate, and the erectio houses thereon, under the administration of fifth Duke of Newcastle and the trustees of present Duke. The portrait is from the can of Mr. Arthur Neale, of Nottingham.

Mr. G. C. Inskip, F.R.I.B.A., the Presi of the Royal Victorian Institute of Architect partner of the well-known firm of Inskip Robertson, architects, &c., Melbourne, is second son of the late Mr. Harry Inskip, a l mill-owner of Hertford, who was well kn and respected in Hertfordshire and adjoi counties. Mr. Inskip was educated at Brig in Sussex, and finally completed his studie Germany under the Rev. A. Dammann, D.D Hanover, during which time he visited man the principal cities of Europe. Mr. Inskip articled to Messrs. Tress and Chambers Queen-street, in the City of London, archit in extensive practice, being architects to sev of the large City companies, and surveyor some of the City parishes. Mr. Inskip completing his articles paid several visits to Continent to complete his architectural stu On first arriving in Australia he practised profession for several years in Stawell, wher

an extensive practice. Some seven years Mr. Inskip visited Western Australia as tect for the Union Bank of Australia, Ld., ank buildings for this corporation in Perth, antle, Geraldton, Roebourne, and Albany erected from his designs. Mr. Inskip was rchitect for the head office of the Western ralian Bank, Perth, and was appointed tect to superintend the erection of the Perth edral, which is now nearly completed, the nal plans of which were prepared by the late Blackett, of Sydney. Mr. Inskip has erected ge number of important buildings in Vic- and neighbouring colonies, amongst others tawell Free Library, several churches, ware- es, shops, hotels, mills, hospitals (including lelbourne Convalescent Hospital for Women), esidences of the late Mr. D. McKellar, of ella Station, Mr. Chas. Ayrey, of War- oke Station, and several large residences in uburbs of Melbourne, and many bank build- in various parts of the colony, and has per- had as varied a practice as any architect in olony. Mr. Inskip is a Fellow of the Royal itute of British Architects, London; a Fellow ie Royal Victorian Institute of British Archi- ; a member of the Royal Society of Victoria, His portrait was taken by Messrs. John- e, O'Shannessy and Co., of Melbourne.

r. George Truefitt, F.R.I.B.A., whose por- we give to-day, was a pupil at the age of f the elder Cottingham. He was articled five years, and then had an appointment at with the late Sancton Wood, and afterwards Eginton, of Worcester. He then went his friend, Calverd Vaux, on a walking through France and Germany, taking ween 400 and 500 sketches. On his return, ough very young, he competed for the Army Navy Club in Pall Mall, a most successful petition for him, as his design brought him of the best of friends and clients in Mr., w Sir) William Cunliffe Brooks, M.P., for om he has worked ever since. Mr. Truefitt erected buildings in 25 different counties; he put up 15 churches and chapels, including St. rge's, Tufnell Park; St. George's, Worthing; John's, Bromley, Kent; Davyhulme church, shire; Blakemere, Herefordshire, &c.; and ored 10 churches. He has erected 8 rectory ses; 7 schools; 13 banks in London, Man- ster, Altrincham, Blackburn; 7 large halls church rooms; 170 houses and mansions, luding a large house at Antibes, in the South France; 20 various buildings; 44 cottages lodges. Amongst his works he has laid out ge sums of money in the forest of Glen Tana, erdeenshire, for Sir William Brooks, in hitectural buildings, and he is now engaged extensive restorations and additions to Aboyne stle (also in Aberdeenshire), the residence of Marquis of Huntly. He has also been hitect to the Tufnell estate for over 20 years. . Truefitt has been, and is, a hard worker, he nself having made the whole of his designs, wings, working drawings, specifications, and spective, coloured, or in pen and ink. Com- itions have therefore been easy with him, as y never cost him anything but his own time, I he reckons that of all the work he has done, out three-fourths of it has been the result of npetitions—a good hint to young men. Mr. uefitt is now giving up his London practice his elder son and a cousin, a former pupil, himself now residing at his picturesque home Shelsley Lodge, Worthing, which is filled th choice curiosities which he has been col- ting ever since he was first a pupil; and here good health, which we wish he may continue he will go on with his Scotch work, and so t quite give up his professional duties which ve always been such a pleasure to him, but so to give him plenty of time to enjoy the auties of a seaside life to the end of the apter.

Mr. William Bell has been connected with the orth-Eastern Railway Company for about 30 ars, the last 12 of which he has acted as archi- ct to the railway company; during which time has carried out a very many large and im- rtant buildings on the system at various places tween the Humber and the Tweed. Amongst hich are the completion of York Station and otel, additions to Leeds Station; new stations Darlington, Sunderland, &c.; warehouses at Vest Hartlepool, Tyne Dock, Hull, &c.; loco- otive and carriage works at Gateshead, Dar- agton, York, and Hull; and at the present me is carrying out extensive additions to the Station Hotel at Newcastle. The photograph given herewith is by Mr. W. P. Glaisby, of York.

CHIPS.

On Saturday the King of the Belgians opened the new Musée des Beaux-Arts, Antwerp, which has been designed by MM. Winders and Van Dyck. It is one of the largest buildings in Belgium, and shows the works of art to great advantage as to lighting and classification.

The Local Board of Bideford have adopted plans submitted by Mr. Baldwin Latham, C.E., for an additional storage reservoir at Bideford. The work will be entrusted to Mr. Baldwin Latham's superintendence. The new reservoir will be situated at the head of the existing reservoir; it will hold at least ten million gallons of water, and will probably cost rather under £5,000, exclusive of a piece of land yet to be acquired.

A committee has been formed for raising a memorial in Manchester Cathedral to the late Dean Oakley.

A public park is about to be provided for the city of Wakefield, partly by gifts in land and money, and partly by subscriptions, the latter amounting to £3,600. An area of 28 acres will be secured, including Lawe Hill and the adjoining plateau.

The Bishop of Bedford consecrated the new south aisle of the Martyrs' Memorial Church, in St. John's-road, Clerkenwell, on Saturday afternoon.

A sub-committee of the Edinburgh town council have commissioned Mr. Charles McBride to execute a marble bust of Mr. Andrew Carnegie, to be placed in the new Public Library just completed from Mr. G. Washington Browne's designs. In recognition of Mr. Carnegie's generous gift to that institution, the town council recently voted one hundred guineas for the bust.

Mr. Alexander Saunderson, builder, of Whittington, Salop, got into a wrong train at Oswestry one day last week, and hastily leaped from it while in motion, rolling beneath the carriages. His left leg has been amputated below the knee, and he is making a good recovery.

The Warneford Hospital at Leamington is about to be altered and enlarged, from plans by Mr. Keith D. Young, of London. The works will include the provision of better sleeping accommodation, a recreation and dining-room for the nurses, rooms for a junior house-surgeon, and more beds for the patients. The outlay will be between £8,000 and £9,000.

The Lords Committee have passed the preamble of the Bill for removing gates and bars from the streets of London. They decided that it was not necessary to insert a compensation clause; but they desired that a clause should be prepared providing that wood pavement shall be put down where it may be considered necessary. The Bill has now passed both Houses.

The parish church of St. Nicholas, Great Yarmouth, the largest parish church in England, is now entering upon its fifth portion of restoration. The parts under treatment are the north and south chancel aisles, and £5,000 is required to carry the works out. The main features of this restoration consist in rebuilding the two large eastern windows, both of enormous size, and of restoring both roofs.

Justices Day and Grantham have granted a rule calling upon the Vestry of St. Mary, Newington, to show cause why a mandamus should not issue requiring the vestry to approve a plan of drainage at the New-street Station of the City and Southwark Subway, the Vestry having declined to do so because the station was built in advance of the building line.

M. Bernhofer, an Austrian engineer, has found that Portland cement resists the action of frost better when mixed with soda. One of his experiments consisted in making a mortar composed of one litre of cement, one litre of lime, three litres of river sand, mixed with two litres of water, in which one litre of crystallised soda had been dissolved. The mortar withstood a temperature of 31½° below zero Centigrade, and a subsequent baking in an oven.

On Wednesday week the foundation-stones of a new Wesleyan Chapel, for Stanley, in the Shotley Bridge and Consett Circuit, co. Durham, were laid. The design is Early English. Accommodation is to be provided for 400 worshippers, and the cost is estimated at £1,600. The architects are Messrs. John Smith and Son, Shotley Bridge, while the contractors are Messrs. Routledge, Dunfield Plain, and Mordue, of Dipton.

The corner-stone of a new north aisle was laid on Friday at Mexborough parish church, under the auspices of the Phœnix Lodge of Freemasons, by the Grand Master of the West Riding of Yorkshire. It is proposed to raise about £600 for the work of restoration.

Building Intelligence.

BINGLEY.—A new cottage hospital built and furnished at a cost of £2,500 has just been opened on the side of Ferncliffe Hill, overlooking the Aire Valley. It has been erected from the designs of Messrs. Armistead and Parkinson, of Bingley and Bradford. It has a south-westerly aspect, and the frontage is 78ft. A verandah is provided in the front of the hospital, and a corridor runs the full length of the building, lighted by a window at each end, the lavatories being placed at the ends. The front is occupied by male and female wards of five beds each, and rooms for the convalescents and the matron, the male ward and the convalescent room being to the right. The full length of the back of the building is occupied by two single-bed wards, matron's and nurses' rooms, medical officer's room, and bath-room. At the rear in a separate wing are the kitchen and domestic offices, whilst on the first floor in the front are two spare rooms. The woodwork throughout is of pitch-pine, varnished, and the walls and ceilings are of white plaster. The heating has been carried out by Messrs. Constantine, of Manchester. Fireplaces are also fixed in the rooms. The vitiated air will be extracted by Boyle's ventilators. The building is of one story, and is built of pitch-faced stone, with ashlar dressings. The chief contractors were:—Mason's work, Mr. W. Foster, Bingley; joiners, Messrs. W. R. and R. Atkinson, Bingley; and plumbers, Mr. C. Howroyd, Bradford.

DUNBLANE.—In the course of the restoration of the cathedral, now in progress from plans by Mr. Rowand Anderson, of Edinburgh, there has been found embedded in the south wall of the south aisle, and partly in the wall of the tower, just above the main door entrance in this aisle, a stone pillar. It has been taken out altogether and laid aside for further examination. The pillar measures 4ft. long and is 18in. in diameter. There is no trace of what it could be supporting, although its foundation was well packed. The work of restoration is making good progress, and the south aisle is nearly complete. The keystone of a window has just been put in in the south aisle. It rises to a height of 30ft., with three columns, and is surmounted with tracery work. All the upper portion of this window is new, and there was little or nothing to guide the architect in his design, as the window has been minus the traceried head for centuries, but the reconstruction is in harmony with the rest of the building.

EDINBURGH.—The commemoration stone of the new asylum for the insane at Craighouse, near Edinburgh, has been laid by the Earl of Stair. In 1878 the managers acquired from the late Col. Gordon of Cluny the estate of Craighouse, the old mansion of which was at once utilised as a retreat for patients of the higher class. The managers finally resolved to build a new asylum, with detached villa residences, a little to the west of the old mansion-house, the latter being still retained in its entirety. The new asylum is designed to accommodate about 150 patients of the better class. The plans were prepared by Mr. Sydney Mitchell from rough designs by Dr. Clouston, the physician-superintendent of the Institution. The cost as contracted for will amount to nearly £66,000, besides outlay on heating, painting, furnishing, &c. Mr. Lownie is the contractor.

NATIONAL ASSOCIATION OF BUILDERS OF GREAT BRITAIN.—The annual meeting of this association was held in the Hartley Institution, Southampton, on Wednesday week. Representatives from London, Liverpool, Manchester, Hull, Sheffield, Bristol, and most of the other large towns in the kingdom attended. At the general meeting the labour question, the Employers' Liability Bill, and the arrangement with the Royal Institute of British Architects for a new form of contract were the subjects discussed. The members dined together at the South-Western Hotel in the evening.

PENTRE. — St. Peter's Church, Pentre, Glamorganshire, was consecrated on Monday, the 28th ult. Mr. F. R. Kempson, of Birchyfield, Herefordshire, is the architect. The design consists of a lofty nave, side aisles, western tower, south porch, chancel, chancel aisles, roofed transept-wise, and having upper floors in each for organ and auxiliary choir, and morning chapel. There are clergy and choir vestries, a

connecting passage behind the east wall of the chancel, which gives direct communication between the clergy vestry and morning chapel. The architecture is of thirteenth-century character throughout. Free use has been made of constructional colour in a variety of different kinds of stone, brickwork, alabaster, marbles, mosaic, tiles, and painted glass. The reredos is in alabaster, combined with marbles, mosaic, and sculpture. Above the reredos is a great triplet, which occupies the whole width of the chancel, the lights being filled with painted glass representing the "Ascension." The completion of this subject is in mosaic (not yet fixed) which extends over the arches of triplet up to the line of the roof. The pulpit is in stone of different colours. The font is composed of a variety of richly-coloured marbles. The morning chapel has a reredos in mosaic with three lights over it, of which the upper one is filled with painted glass representing our Saviour as "The Redeemer," and the lower one figures of "St. Peter" and "St. John." The works have been carried out by Mr. Thomas Collins of Tewkesbury.

Stamford.—The parish church of St. Mary is undergoing an extensive scheme of restoration from plans by Mr. John D. Sedding, of London. The chancel is to be entirely repaved in marble and stone, and the chancel roof is to be decorated. Screens will be put up between the chancel and side chapels and the nave, and parclose screens between the side chapels and the chancel. The old heating apparatus has been removed, and a system of heating introduced which has involved relaying the floor of the nave. This will be paved with stone, while wood blocks will form the flooring beneath the sittings. One of the important alterations will be the removal of the organ from the north to the south side of the chancel. It has hitherto stood in the Golden Choir, the chapel of our Lady and a former chantry. By the organ's removal the architectural features of the chantry, in which a new stained east window will be placed, will be opened to view. An altar will also be erected in the chapel, so that it can be utilised for morning service. At the junction of the wall of the north aisle with the Lady-chapel the doors and stairway leading to the rood-loft have been discovered and opened out. The walls of the church will be cleansed, the altar raised, and new seats for clergy and choir are to be put up. The contractors for the nave are Messrs. Roberts, of Stamford, and for the chancel Messrs. Trask, of Norton, Somerset. The cost of the general outlay on repairs will amount to over £2,500.

Walker-on-Tyne.—A brass-foundry has just been completed at Walker for Messrs. John Mills and Sons, whose premises in Forth-street, Newcastle, have been acquired by the North Eastern Railway Company. The site is bounded by roads on three sides, and covers an acre of land. The buildings already finished are ranged round two sides of the site, the large brass-foundry being placed in the centre of the site. The chief offices and stores abut on the road from Newcastle to Shields, the length of frontage being over 200ft. The office block includes on ground floor the clerks' and cashier's offices, lavatory, and staircase, and on the first floor rooms of the principals, experimenting and other private apartments. The principal workshop for turning and finishing is 130ft. by 38ft., and has a high open roof, ventilated with extracting and inlet shafts, and lighted with windows having arched heads. Opening off this shop are the foreman's office, fitters, polishing, and pattern shops, pipe store, &c. The brass-foundry, 80ft. by 40ft., is 30ft. high, and is fitted with travelling cranes, crucibles, casting pits, stoves for tempering, &c. The boiler-house adjoins, as well as the smithy. The chimney stack from the boiler-house terminates in a cornice, having mosaic panels, with the name of the firm worked in. The showrooms and stores for lighter articles and electricians' shops are placed on the first floor, accessible from shops below. The chief external elevation is broken up with pilasters dividing the windows, and continued into dormers having mullioned lights and shaped Queen Anne gables. The works have been designed by Mr. W. H. Knowles, Granger-street West, Newcastle, Mr. Walter Scott being the contractor.

The foundation-stone of Kington Mission Church, Herefordshire, was laid to-day. The architects employed are Messrs. Kempson and Fowler.

Engineering Notes.

Auchmithie, N.B.—A new fishing harbour is being constructed at Auchmithie, a fishing village on the Forfarshire coast, between three and four miles north-east from Arbroath. The work will cost about £4,500, and the plans show a pierhead carried out about 65ft. from the rocks, inclosing part of the natural harbour. Taking advantage of the rocks, the new harbour runs at nearly right angles to the natural harbour for a distance of 260ft. in a north-easterly direction, and then at right angles for a further distance of 230ft. in a direction of about north-west. The works were begun in January last with the excavation of the area inclosed by the pier, which has been deepened, part of it to the extent of 2ft. below low water, and part of it to the depth of low water. It is expected that the work will be completed early next year. Mr. Barron, C.E., is the engineer, and the contractor is Mr. John Malcolm, Thurso.

PARLIAMENTARY NOTES.

The London County Council Bill.—The consideration of this Bill was continued on Tuesday before the Committee of the House of Lords.—Mr. Henry Currey, F.R.I.B.A., examined by Mr. Cripps, Q.C., said he considered it advisable that there should be an appeal against the decision of the superintending architect to the County Council as to the general line of building, and in his opinion the tribunal of appeal proposed by the Bill was a satisfactory one, consisting as it did of one member appointed by the County Council, one by the Council of the Royal Institute of British Architects, and one by the Council of the Institution of Surveyors, and a proviso being inserted to the effect that the two last-named members of the tribunal should not be members of, or in any way connected with, the Council. After hearing counsel on both sides, the Committee decided to proceed with the consideration of Clauses 30 to 41, by which the County Council sought power to approve plans under the Metropolitan Building Act, 1855; power of appeal against the certificate of the architect as to the general line of buildings; power to authorise larger buildings without party-walls; the defining of the line constituting the centre of the roadway; power to make by-laws with respect to materials for plastering and within 3ft. of sites; power with regard to the use of houses as public buildings; as to giving notice to vestries and district boards of the building or demolishing of any house, building, or wall; as to buildings abutting upon more than one street; as to the extension of any part of a building within a certain distance from the centre of the road; the laying out of new carriage-ways; as to the height of buildings; and as to the exemption of Government property from building regulations. On the clause by which it is sought to allow the room in certain warehouses and manufactories to be of larger dimensions than have hitherto been permitted, the committee accepted the principle, but wished to be satisfied that proper safeguards against fire were provided for by the wording of the clause. Capt. Shaw gave evidence on this point on Wednesday. Captain Shaw said that, having regard to the condition of the City, the crowding of warehouses, and the narrowness of the streets, the extension of the cubical capacity of buildings without the intervention of party-walls, as proposed by the County Council, from 216,000 cubic feet to 250,000 cubic feet would be specially dangerous as regards increased risk of fire, but it would be a sufficient safeguard if the Council were only to grant special consent for each enlargement upon the report of himself and of the superintending architect. The height was the most dangerous factor, and 60ft. should be the limit of height. With the safeguards suggested he would not object to see the City included. Even with the safeguarding provisions, the increase of the cubical contents of warehouses would have a perceptible influence in raising the rates of insurance of adjoining property. The committee decided to pass the clause with the safeguards proposed, the City not being exempted from its provisions.

An envelope factory erected from plans prepared by Mr. Charles C. Jones, architect, Cardiff, and Mr. H. Donnelly, C.E., of Dublin, has lately been opened in Dublin, Ireland.

The second section of the North Cornwall line, from Launceston to Delabole, a distance of 18 miles, has just been commenced by the contractors, Messrs. Curry, Reeve, and Co., of Westminster, who have also undertaken the contract for the third section, that from Delabole to the terminus at Padstow. The whole of both sections are to be opened for traffic by August, 1892.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opini our correspondents. All communications shou drawn up as briefly as possible, as there are claimants upon the space allotted to correspondent

It is particularly requested that all drawings a communications respecting illustrations or literary m should be addressed to the EDITOR of the Bu News, 332, Strand, W.C., and not to members staff by name. Delay is not unfrequently othe caused. All drawings and other communication sent at contributors' risks, and the Editor wil undertake to pay for, or be liable for, unsought con tions.

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Bound volumes should be ordered early (price T Shillings each), as only a limited number are up. A few bound volumes of Vols. XLI., XLIX LI., LIII., LIV., LVI., and LVII. may still be had, Twelve Shillings; all the other bound volumes a of print. Most of the back numbers of former vo are, however, to be had singly. Subscribers requ any back numbers to complete volume just ended s order at once, as many of them soon run out of pri

Received.—A. B.—C. N. and Co.—J. S. and Co.— —J. C. E.—K. E. and Co.—G. B. and L.

Intercommunication.

QUESTIONS.

[10320.]—**Electric Lighting.**—Are there general rules to follow in fitting up a house wit electric light? What precautions are necessary to pr danger? and how should the wires be cased? Wh the pressure recommended?—Builder.

[10321.]—**Public Libraries.**—Can any reader me any information as to the methods of classificatio books that have been found successful in any rece established library? Any details as to the best for "indicator" and fittings will be of value.—G.

[10322.] — **Reredos.** — Is there any work gi drawings of old screens behind altars? Which is posed to be the earliest example in this country reredos?—Antiquary.

The Jarrow and Hebburn Co-operative So have adopted plans by Mr. Walter Hanson, Ja and South Shields, for extensions to their ce premises, Market square and North-street, Jar The premises will have five shops on the gro floor, and in the rear will be a slaughter-house, the first floor will be placed showrooms, workro and warehouses. On the second floor will lecture-hall, 82ft. by 36ft., and lodge and mittee rooms. The cost is £4,660.

The foundation-stone of a new public hall laid at Camborne on Thursday, July 24th. It occupy the site of a temperance hall, and include a room seated for 2,000 persons, with r ing-room, conference hall, and restaurant. front will be of Elvan stone with granite des Mr. Silvanus Trevail, of Truro, is the architect, Mr. Julian, of the same city, has taken the con for erection at £3,450.

The foundation-stone of a new workhouse St. Pancras was laid on Friday on the site o old building. The workhouse, which is to be from plans by Messrs. A. and C. Harston, wh a plain, substantial building, with better arra classification than the old one, more accomm tion for married couples, and improved sani appliances. Messrs. Kirk and Randall, of W wich, are the builders, the first contract amoun to £74,827.

LEGAL INTELLIGENCE.

T IS A "NEW" ROAD?—Messrs. Studd and ilders, of Barratt's-grove, Stoke Newing- ere summoned by the Hackney District of Works, on Friday, to show why they not pay their apportionments of paving s in respect of Barratt's-grove. The road is a very bad condition.—Mr. Ellis, Town of Hackney, said in any new road the ants thereof paid the first charges for , and the district boards took them or maintenance afterwards. In the pre- se the estimate for making up was £1,100; had been collected, but the remainder sputed by Messrs. Studd and others.—Mr. C. ng, who represented the defendants, called ber of the oldest inhabitants to speak of the on of Barratt's-grove as far back as 50 These declared that the road had at one bar across the bottom, but that it been lighted, watered, and repaired by presumably from the Hackney District of Works. — Against this Mr. Ellis Mr. Lovegrove, who has been 34 years or to the parish of Hackney, and never that period had the parish done anything to id. One side of the road was a church path, had by ecclesiastical law to be repaired.— ros said upon the evidence—though the de- its had paid local rates for 25 years in the —he was satisfied the parish had never taken he road, and therefore he should make the against the defendants.

ANCEL GATES.—A noteworthy case with regard erection of chancel gates came before the n Consistory Court on Wednesday week. pplication was for a faculty to authorise tions in the church of St. Mary, Spring- . It was proposed to convert the south el into a side chapel, to raise the floor of ancel, to move the pulpit, to remove certain so as to make a passage across the church, to make other alterations in the church. ellor Tristram said the Court was satisfied on vidence that the alterations were desirable, would decree a faculty for them except as to ates of the chancel.

RE WILLIAM HANCOCK.—The debtor, who was ibed as of St. Paul's Churchyard, also of den and elsewhere, builder, farmer, and con- r, applied on Friday to pass his examination. abilities were returned at £49,227, of which 12 were fully secured, with assets estimated ,643. The debtor, who was formerly a timber hant, commenced business as a builder in 1883 out capital, and as a farmer at Kingsclere in with an estimated capital of between £3,000 4,000. He failed as a timber merchant in the 1860 and 1870, and in 1880, when trading as a er, he affected an arrangement to pay a com- on of 4s. in the pound, but failing to carry out erms he was adjudicated bankrupt in 1882. ttributed his present failure to his inability to se of his building properties in St. Paul's churyard and at Brondesbury. The debtor d his examination.

RE WILLIAMS, FRY, AND CO.—The debtors, were cement merchants at New Stone- ings, Chancery-lane, and at Stone, Green- , Kent, applied on Saturday to pass their ination. The debtors started in business in mber, 1888, with a capital of about £3,000, sed from the sale of a laundry at Ealing. The ving order was made in May last, and the rs ascribed their failure mainly to loss of al occasioned by two actions in which they had involved, and to a liability on a guarantee n in connection with the laundry. Their lities were returned in the statement of affairs 9,347, of which £3,681 will probably rank, with stimated surplus in assets of £423. The debtors allowed to pass.

DESCRIPTIVE RIGHTS TO "WAYS OF NECES- ."—WILKES V. GREENWAY. — Judgment was n on Tuesday in the High Court of Appeal, isting of the Master of the Rolls, and Lords ices Lindley and Bowen, in an appeal from the sion of Mr. Justice Vaughan Williams. The ndant had acquired, by occupation for 12 years, le, under the Statute of Limitations, to two lens at Wolverhampton, of which the plaintiff been the owner. The plaintiff still owned the bounding these gardens on the north and east, also owned a private road which was the only ns of approach to the gardens, and which had ays been used by the defendant. The plaintiff med an injunction to prevent this user of the l, contending that, although the defendant had ired a title to the land, he had not acquired right of way over the road, since the Prescrip- Act required an uninterrupted user for 20 years the acquisition of such an easement. The ned Judge gave judgment for the defendant, ling that since a defined way was necessary to enjoyment of the gardens, the law would pre- e that somehow or other, by legal means, by at, or otherwise, that right of approach must have been created without which possession could not have been taken. The plaintiff appealed. The Court took time to consider the question, and delivered judgment allowing the appeal. In the judgment of the Court, read by the Master of the Rolls, his Lordship said: The one point argued before us has been whether, assuming the premises to have passed to the defendant by virtue of the Statute of Limitations, a right of way over this approach inevitably came into existence over the plaintiff's remaining land as a way of necessity and as distinct from any other way. Without further knowledge of the facts, we can only say that there is nothing in the Statute of Limitations to create ways of necessity. The statute does not expressly convey any title to the possessor. Its provisions are negative only. We cannot import into such negative provisions doctrines of implication that would naturally arise where title is created either by express grant or by statutory enactment. The title to the premises is not a title by grant. The doctrine of a way of necessity is only applied to a title by grant, personal or Parliamentary. The statute does not apply to a right of way. It is not contended that the statutory enactment as to easements applies. We are therefore unable to agree with the learned Judge below.

WATER SUPPLY AND SANITARY MATTERS.

DURBAN WATERWORKS EXTENSION.—The Corporation of Durban, Natal, are taking steps to push forward with their new waterworks extension as rapidly as possible. Mr. J. Fletcher, C.E., the local borough surveyor of Durban, has drawn out a preliminary scheme for taking a large supply of water from the Umlaas River, in the neighbourhood of Durban. Mr. W. H. Radford, civil engineers, Nottingham, is the consulting engineer for the scheme, and the scheme was arranged for execution in two sections. The estimated cost of the first section was £65,767, and of the second section £54,625, making a total of £120,392. The intake for the first section will be situate on the Umlaas River, ten miles from Durban. The water will be conveyed several miles down the river in 18in. iron pipes to the pumping station, where a portion of the water will be utilised to work turbines which will pump the remainder of the water to a high summit reservoir and filter beds. From the summit reservoir and filter beds the water will flow by gravitation through four miles of 15in. iron pipes delivering into three local town distributing reservoirs. When the second section is carried out, the 18in. iron pipes will be carried eight miles further up the river to a water intake at a sufficiently high level to supply the town by gravitation. When the scheme is finally completed, the works will deliver two million gallons per day.

PENDLEBURY.—Some time ago the Pendlebury Local Board decided to abate the nuisance caused by the sewage of a part of their district flowing into the Irwell, and purification works were commenced at Slack Brook, from designs of the late Mr. Robert Vawser, M.I.C.E., of Manchester. After Mr. Vawser's death, Mr. T. S. M'Callum, A.M.I.C.E., also of Manchester, was appointed engineer, and he has now brought the work to a completion. The public inauguration took place on Monday last. The system of purification adopted is that of the International Water and Sewage Purification Company, Limited. The Pendlebury works are the first in Lancashire where this company's process is in operation, although large experimental works have been set up at Weaste for trial by the Salford Corporation. Four tanks have been constructed at Slack Brook, into which the sewage flows for precipitation after the addition of the precipitant, "ferozone," by means of an automatic mixer. From the tanks the water is drawn off to filters, with contain a layer of "polarite," for the removal of the matters in solution which have not been attacked by the precipitant. From the filters the effluent is said to flow clear. The filters are made self-cleansing. The other part of the district (Swinton) has been provided with a sewage farm of 32 acres; but an injunction having been threatened with reference to the pollution of the stream, Mr. M'Callum has there constructed works of a similar nature and for the same process. These will be completed in a few weeks.

THE VENTILATION OF SEWERS.—At the recent Sanitary Conference held at Stirling, Mr. J. D. Watson, town surveyor of Arbroath, gave the results of inquiries he had made of fifty-five local authorities as to the methods adopted by them for the ventilation of the sewers and drains. Six of these towns had no system of ventilation; in ten the sewers were only partially ventilated. In the towns where ventilation had been appreciated the favourite method was to bring up a square shaft or manhole from the sewer, and protect it at the street surface by a cast-iron box, fitted with a lid partly open and partly closed. In 11 towns shafts were carried up the sides of the houses; in six there were communications with chimney stalks; in five rain-water conductors were used for ventilating purposes; in two the foul air was passed through charcoal placed in trays over the manholes; and in Blackburn the sewers were connected with special shafts for the purpose of conveying the gas above the houses. Having discussed these various methods, he recommended the adoption of the system of open manhole shafts, pointing out at the same time the imprudence of allowing exhaust steam to be blown off into the sewers, for the liberation of foul gases was likely to aggravate existing dangers.

VILLAGE WATER SUPPLY.—A scheme which has been devised by Mr. W. H. Radford, C.E., of Nottingham, for the supply of water to the village of Earls Barton, might possibly be applied successfully to other villages. As the population is only 2,500, the inhabitants do not wish to carry out works involving a large capital outlay or annual maintenance. Four wells have been sunk through porous strata situate on rising ground above the village, and good water was found on the surface of a thick clay strata at a depth of 20ft. Neither of these wells would yield sufficient in itself to supply the village, but an ample supply can be obtained by connecting the four wells together with a collecting pipe laid just below the surface of the clay. The length of the 9in. earthenware socketed collecting pipe will be 300 yards, and it will have open joints at the top of the pipe to admit water. A 4in. iron service main will be connected to the end of the collecting pipe, and will convey the water to the distributing pipes in the village. The collecting pipe is sufficiently high in level to enable the greater part of the village to be supplied by gravitation. The part of the village which is too high to be supplied by gravitation, has already a good supply from surface wells, but the scheme is arranged so that a small pump can be put down at any time to raise the water into a tank which would increase the pressure sufficiently to supply this part also. The cost of the gravitation scheme to supply those parts of the village now in need of water would only be £1,100, and the annual expense would be practically nothing. If a pump and water tank are added to supply the high part of the village, the extra cost would be £400. The scheme is now being considered by the local authorities.

STATUES, MEMORIALS, &c.

CANTERBURY.—The proposal to erect a memorial to the Canterbury martyrs, who perished during the Marian persecution, has been approved by the Archbishop of Canterbury, who suggests that if the space admits an old type of cross on steps, with the names engraved on a tablet or round the base of the shaft, would be simple and appropriate. This will be adopted, the cross held to be most suitable being the ancient form locally known as the "Canterbury cross."

CHIPS.

Mr. John Fisher, who has had charge of the Art Department at the Merchant Venturers' School at Bristol since its opening, has tendered his resignation to the committee in view of opening a school of art in that city. During the five years of his teaching Mr. Fisher's students have been awarded four silver medals, including two this year by the examiners of the Science and Art Department. Mr. Fisher, who was a student in the Sheffield School of Art, has himself gained many distinctions, including the gold medal.

Mr. Albert Webster, engineers' surveyor, of London, aged 46, was killed at Cheltenham Station by a passing train, while engaged in completing the surveys with his assistants for the proposed new station. A verdict of accidental death was returned at the inquest.

It is proposed to enlarge the present school in connection with the Wesleyan Chapel at Ashford, Kent, and also to improve the chapel by providing two vestries and building an organ-loft, &c., together with a new rostrum in place of the old pulpit. Mr. Henry J. Jeffery, M.S.A., of Ashford, has been appointed the architect, and Mr. H. Knock the builder.

A large drill-hall for the No. 11 (Weston-super-Mare) Battery, 1st Gloucester Artillery Volunteers, was opened on Saturday. The whole of the work (except the iron roof) has been done by the members of the battery from plans by and under the supervision of Mr. Charles S. Leech, architect, Weston-super-Mare.

It is said—not on very good authority perhaps—that the Dean of Norwich has a scheme for erecting a marble reredos at the east end of the presbytery of Norwich Cathedral. The effect of this will be, it is averred, to hide the only ancient bishop's throne in Britain which faces west. The design is to be intrusted "not to one of the three or four architects in Great Britain who are competent to undertake church restoration, but to a builder."

Our Office Table.

Two district surveyorships were filled up at Tuesday's meeting of the London County Council. They were those of South St. Marylebone, rendered vacant by the demise of Mr. Joseph Jennings, and East Islington, where the new appointment was also necessitated by death, that of Mr. Joseph Turner, who had long been ill. Both districts are said to bring in emoluments beyond the annual sum recently named by the County Council as that to which all such offices should be gradually equalised—£500—and while Islington will probably be the more lucrative, being less built over, Marylebone is the pleasantest from a residential point of view. Twenty-nine candidates offered themselves for the appointment, and a vote was taken in committee on 23 names. Mr. Edward J. Tarver, F.S.A., of Buckingham-street, Adelphi, who was placed first, elected to take South St. Marylebone, and was accordingly appointed to that district, and Mr. Josiah Goodchild, who obtained the next highest number of votes, was given the East Islington district. The selections have been confirmed by the County Council. Both officials will have to abandon private practice, and to reside in their respective districts.

The awards of the jury of the second annual art exhibition of Munich were published on Wednesday. The excellence of the planning and designs of Mr. Alfred Waterhouse, R.A., is, we are glad to see, recognised by the award of a first medal for architecture, and Dr. Rowand Anderson, of Edinburgh, obtains a well-deserved second medal in the same class. Among the British painters exhibiting, Mr. James Guthrie, of Glasgow, receives the first medal, and Mr. John Reid, of London, Mr. Walton, Glasgow; and Mr. Lavery Crawhall, jun., second medals. Mr. Onslow Ford, of London, obtains a second medal for sculpture. Of etchers Mr. Macbeth, Mr. Axel Haig, Mr. Walker, and Mr. Wyllie receive second medals. M. Neuhuys, the Dutch painter, obtains a first medal; and M. Van Aken, of Antwerp, and M. Struys, of Malines, M. de Boeck, of the Hague, and M. Baertsoen, of Ghent, second medals for painting.

The Suffolk County Council had again under consideration at their last meeting the claim for compensation made by Mr. Henry M. Eyton, of Ipswich, who was county surveyor from June, 1885 to April, 1889, and surveyor of buildings only till the Michaelmas following. Mr. Eyton had, at their previous meeting, been refused compensation by the county council on the ground that the appointment was an annual one, and that if any sum were voted him it would be surcharged by the official auditor, and the matter now came up afresh, as Mr. Eyton had applied to the Treasury for £500 as compensation. The Chairman again pointed out the legal aspects of the case, and proposed that the council adhere to their previous report. Alderman Biddell and others thought this would be an unjust treatment to an old servant of the county, and moved, as an amendment, that the treasury be recommended that some compensation was "equitably" due to Mr. Eyton; but it was lost by a large majority, and the committee's report was adopted. There may be more underlying this apparently harsh treatment of an old official than is seen on the surface; but the East Riding County Council have in an identical case shown that where there is a will there is a way of circumventing the Government auditor. The latter body has accepted the resignation of Mr. Thomas Simpson, for many years county surveyor for the Riding, and have appointed him consulting surveyor at a reduced salary.

The ceremony of uncovering the widely-known mosaic pavement at Woodchester, near Stroud, was performed on Tuesday by the Dean of Gloucester. The pavement lies below the surface of the old churchyard at Woodchester, and is that of a spacious hall of a Roman villa, 48ft. 10in. square. The design illustrates the legend of Orpheus playing upon his lyre, taming and charming, by the magic of his music, beasts, birds, and fishes, and attracting even trees and shrubs. Considerable damage has been done to the pavement—partly by exposure during frost, and partly by grave-digging—but sufficient remains to make the spot of great interest to antiquarians. The first recorded notice of the pavement is by Edward Shwyd in 1693. It was completely opened in 1814, and at intervals till 1880, since which time it has been covered. The Dean expressed the opinion that the villa was the residence of the chief military general of this part of the Roman dominions. The pavement will remain on view till the 11th inst.

The third examination inaugurated by the Worshipful Company of Carpenters' has just been held. This examination is stringent in character, the candidates having to present themselves on two evenings at Carpenters' Hall for the written work, on the following day they are examined in practical work at the Company's workshops at Stratford, and on the fourth day they are orally examined by the committee, consisting of the presidents of the Institute of British Architects, the Institute of Civil Engineers, the Architectural Association, the Institute of Builders, the Clerk of Works Association, Sir Philip Magnus, Sir James C. Lawrence, Professor T. Roger Smith, and Professor Banister Fletcher, &c., so that any candidate gaining the Company's certificate may fairly be considered as qualified in the subjects in which he has passed. The examiners did not award a gold medal this year, but gave the silver and two bronze medals. The successful candidates were:—1st class certificates; T. Vest (silver medal), T. J. Evans and J. Davison (bronze medals), J. Goddard, W. M. Dixon, and D. Bryant. 2nd class certificates: J. Inkpen, G. A. Mitchell, J. Davies, W. H. Masters, W. E. Cutter, and H. J. Prosser.

Plumbers Registered Since 1st July, 1890.

London Journeymen.

Crissell, E., 79, Riversdale-road, Highbury, N.
Harpin, W., 18, Lennox-road, Walthamstow.
Robb, J. R., 43, Fellbrigg-road, East Dulwich, S.E.
Sisley, S. C., 26, Warner-street, New Kent-road, S.E.
Wilson, J. W., 4, Bickerstaff Cottages, South Ealing, W.

Provincial Masters.

Adams, A., Kirriemuir, N.B.
Austen, R., 119, High-street, Margate.
Bell, P., 117, Scott-street, Galashiels, N.B.
Blackmore, J., Upper Jail-street, Ennis, Co. Clare.
Bolton, A., 151, Main-street, Bingley, Yorks.
Costello, L., Church-street, Ennis, Co. Clare.
Ford, T. B., Market-street, Coldstream, N.B.
Fortune, R., 25, Devizes-road, Swindon.
Greaves, F. W., Canada-row, Rawdon, Leeds.
Hicklin, H., Church-street, Tamworth.
Keighley, G. B., Methley, Leeds.
Moffett, W., Princess-street, Corbridge-on-Tyne.
Ramsey, T., 2, Fountain-road, Hull.
Whitaker, J., Addingham, Leeds.

Provincial Journeymen.

Barf, W., 3, Mayfield-terrace, Harrogate.
Beats, W. K., Millar-street, Carnoustie, N.B.
Brannam, J., 6, Sunny Bank, Barnstaple.
Coultous, R., 7, Newport-terrace, Campbell-street, Hull.
Cunningham, P., 11, Westfield View, Wakefield.
Eaton, J., 4, Heath-terrace, Chevely-road, Newmarket.
Fowler, C., Market-place, Northallerton, Yorks.
Gibson, J. W., 57, Otley-road, Headingley, Leeds.
Graham, R. E., 8, Church-row, Kirkgate, Leeds.
Hinde, J., Princess-street, Workington, Cumberland.
Johnson, T., Horse Mill Yard, Knaresborough, Yorks.
Lambert, R., 6, Chapel-street, William-street, Limerick.
Lawson, W., H.M.S. *Rupert*, Hull.
Loveman, E. J., 13, Harold-road, Westgate-on-Sea.
Melville, C. G., 11, Bank-street, Lochee, Dundee, N.B.
Milligan, J., Castle View-avenue, Limerick.
Nelson, J., Court House-street, Otley.
Oldham, J. W., 67, Meadow-road, Leeds.
Richardson, J., 1, Calder Grove-terrace, Dewsbury.
Robertson, C. F., 61, Frederick-street, Edinburgh, N.B.
Roffey, R., 5, William-street, Grays, Essex.
Russell, J. W., 22, Sheepwash-lane, Great Bridge, Staffs.
Stobbart, W. J., 8, Cooksey-road, Birmingham.
Tetley, F. W., 14, Gathorne-terrace, Roundhay-road, Leeds.
Thurlow, A., 132, Shakspeare-street, Burmantofts, Leeds.
Watson, J., Douglas-place, Galashiels, N.B.
Whitaker, J., Main-street, Addingham, Leeds.
Wilson, W., 10, Meanwood-terrace, Servia-grove, Meanwood-road, Leeds.
Wilkinson, W., Sanitary Offices, Ford-street, Derby.

Additions have been made to the Congregational Hall at Blaydon-on-Tyne, and special attention has been paid to the ventilation, the extraction of the vitiated air now being effected by the latest improved form of Messrs. Robert Boyle and Son's self-acting air-pump ventilator.

The Adamant Company, Limited, have just completed the contract for plastering the new Branch Bank for the National Provincial Banking Co., recently erected in the Horse Fair, Birmingham, from the plans of Mr. H. R. Gribble, architect, London, and under the superintendence of Mr. Bampfield, clerk of works. The same company have also secured the contract for plastering to be done in the extension of National Provincial Banking for premises in Waterloo-street and Bennett's Hill, Birmingham, and also under the same architect. Messrs. J. Barnsley and Sons are contractors for the Horse Fair Bank, and Messrs. W. Sapcote and Sons for the Waterloo-street and Bennett's Hill.

Trade News.

WAGES MOVEMENTS.

Liverpool.—The cabinetmakers of this city on Monday night to receive the reply of the gates appointed to meet the Masters' Associa just formed, to the demand of the men for a crease of 2s. a week all round, time and quart ordinary overtime, and time and a half for s overtime, such as bank holidays. Mr. Ed Jones, chairman of the joint committee of Alliance and Amalgamated Union, presided, there were about 230 workmen present. The r of the delegates was that the masters offere advance, but refused to allow anything extr overtime. It was unanimously resolved to work on the following Thursday (yesterday).

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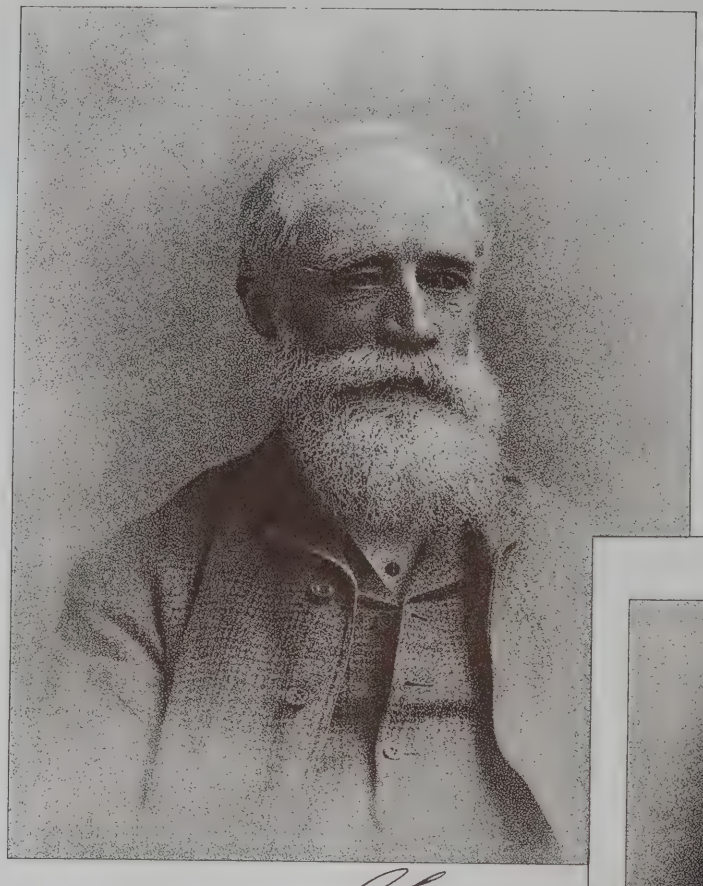
Arundel.—For new coal shed and three cottages, alterations and repairs to various old buildings at S Wharf, Arundel, Sussex, for Mr. W. A. Hounsom. E. J. Hamilton, Brighton, architect. No quan provided:—

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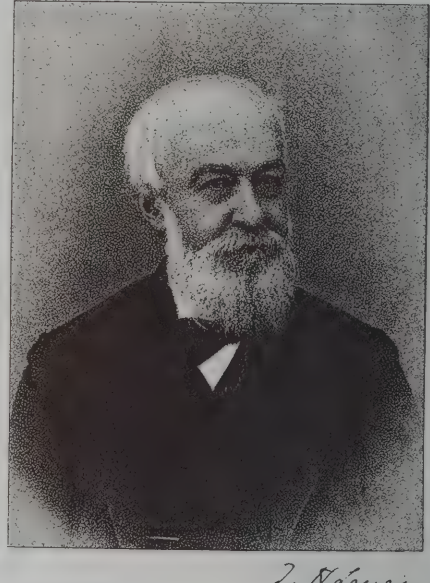
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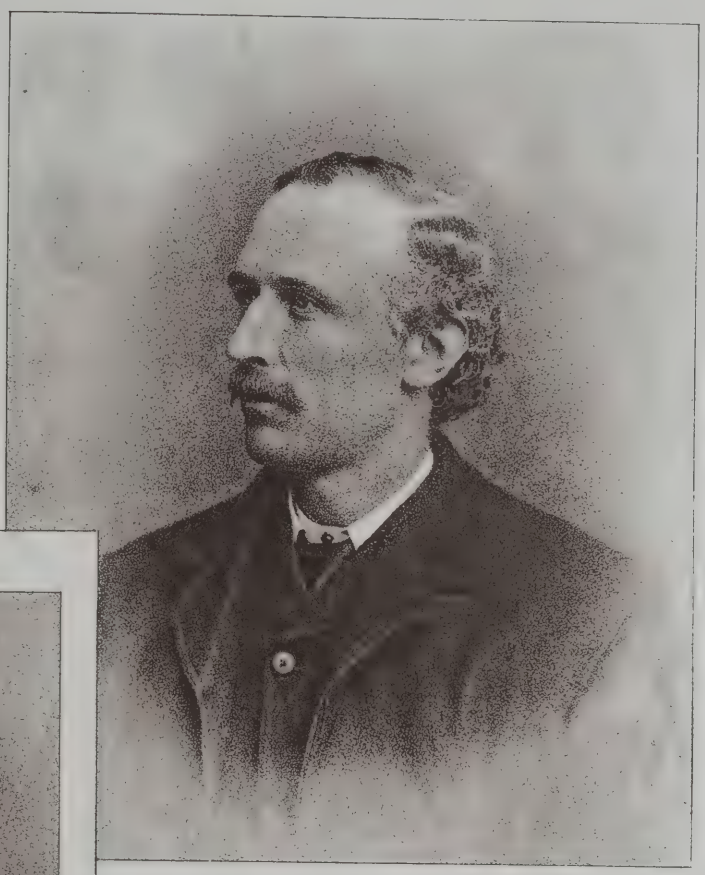


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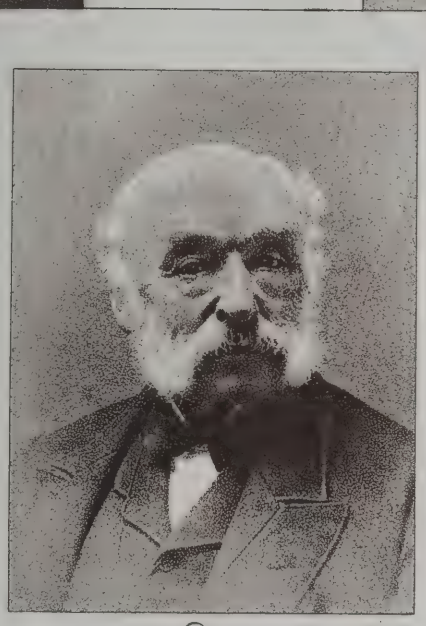


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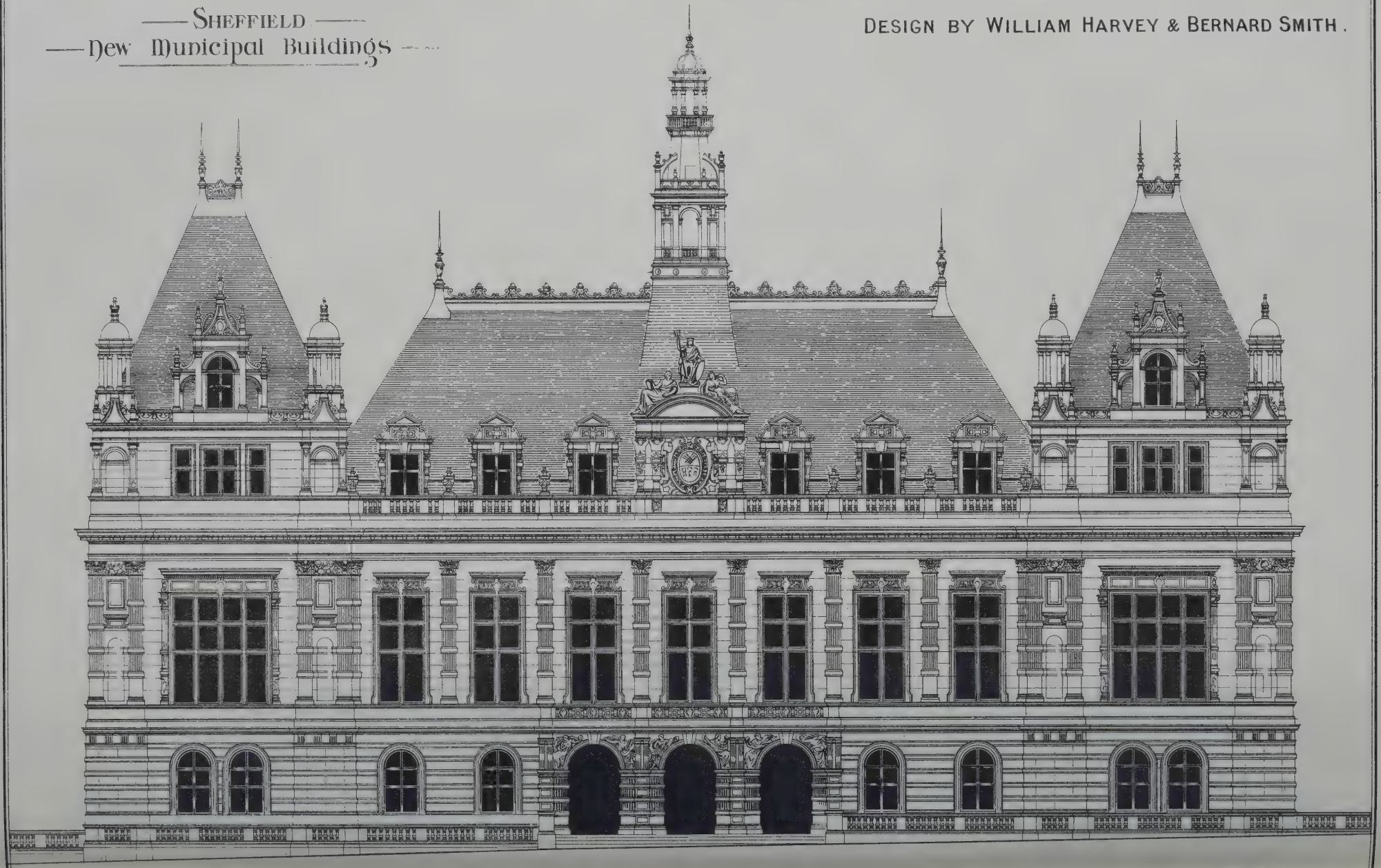
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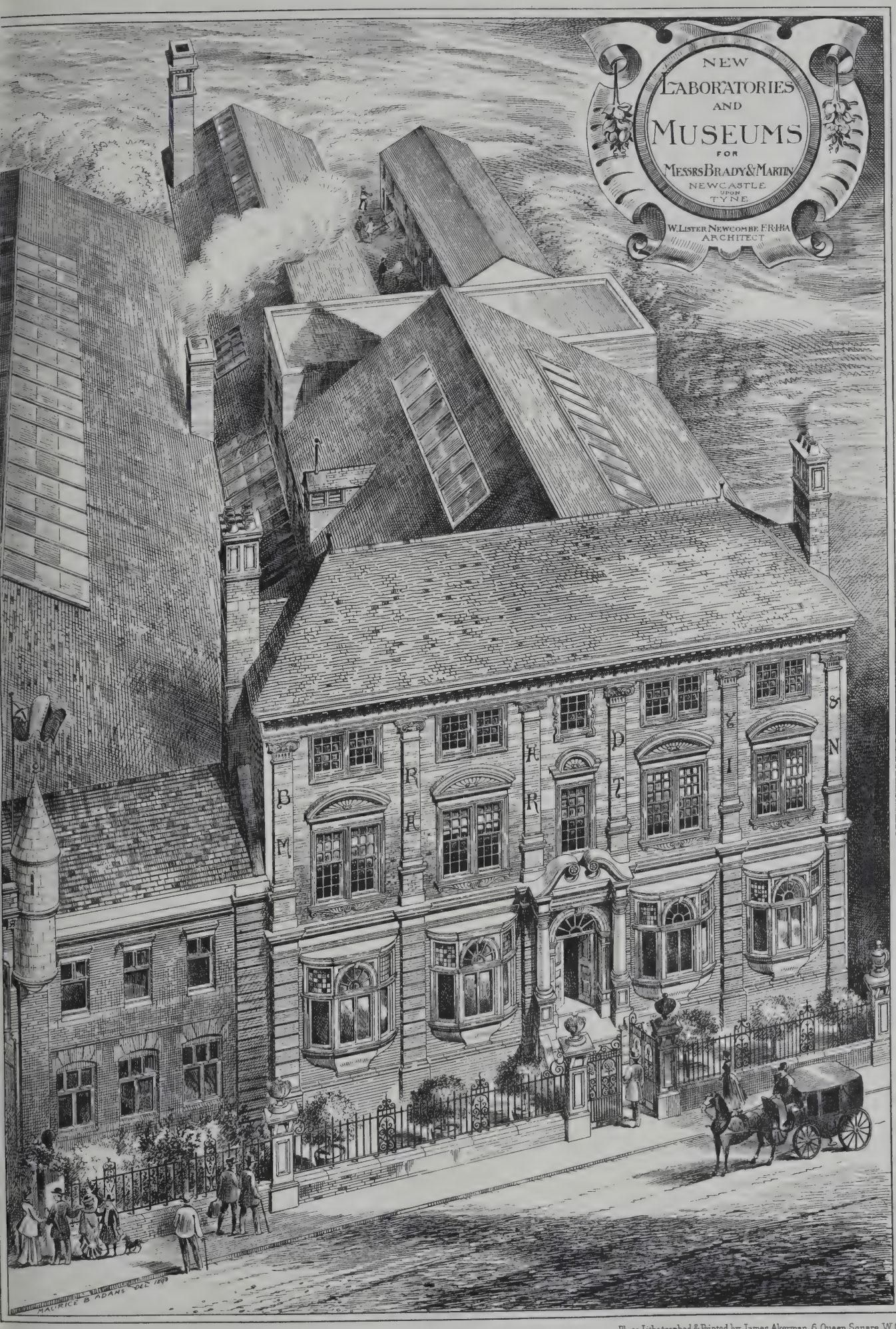
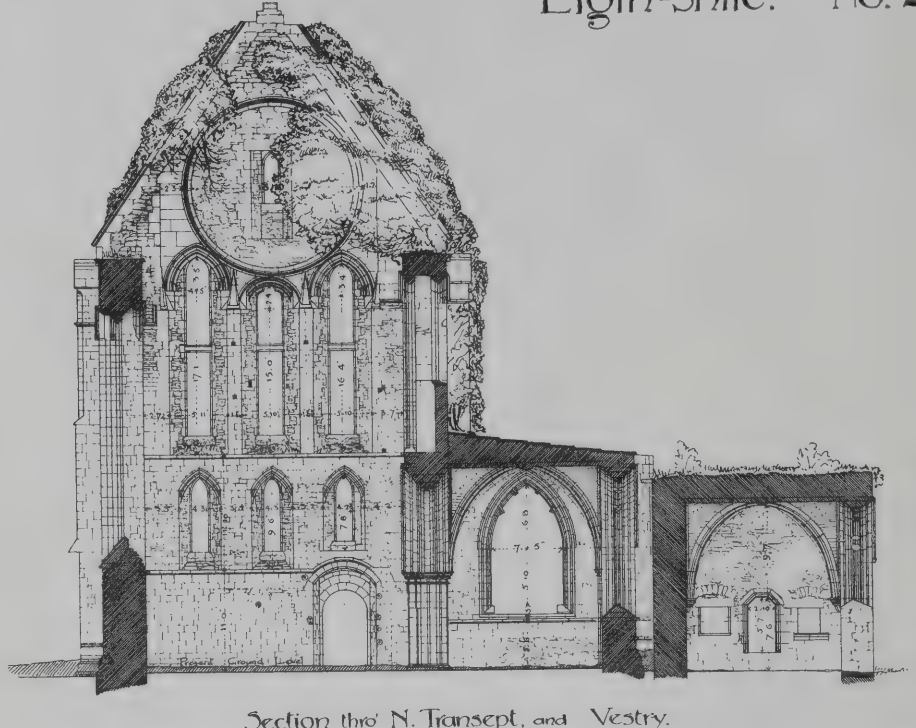


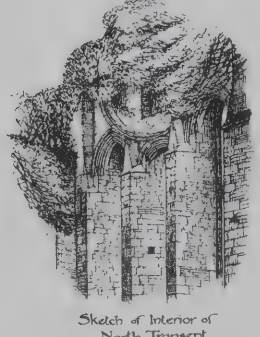
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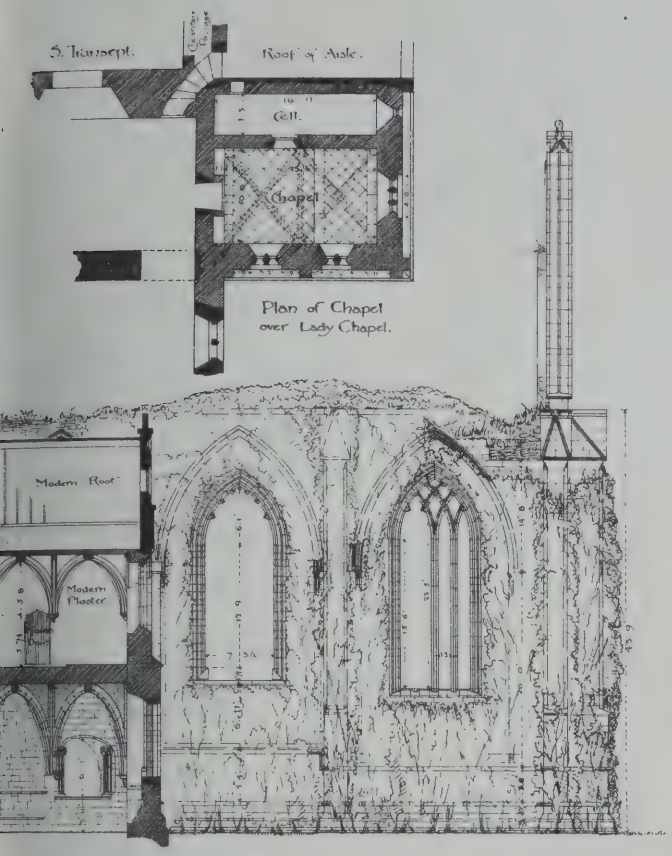
Section thro' N. Transept, and Vestry.



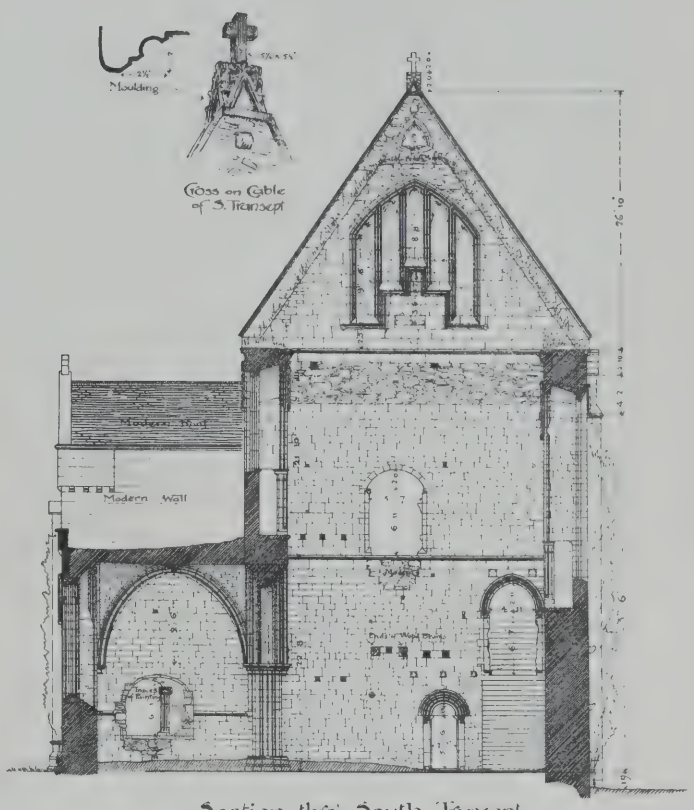


Sketch of Interior of North Transept.

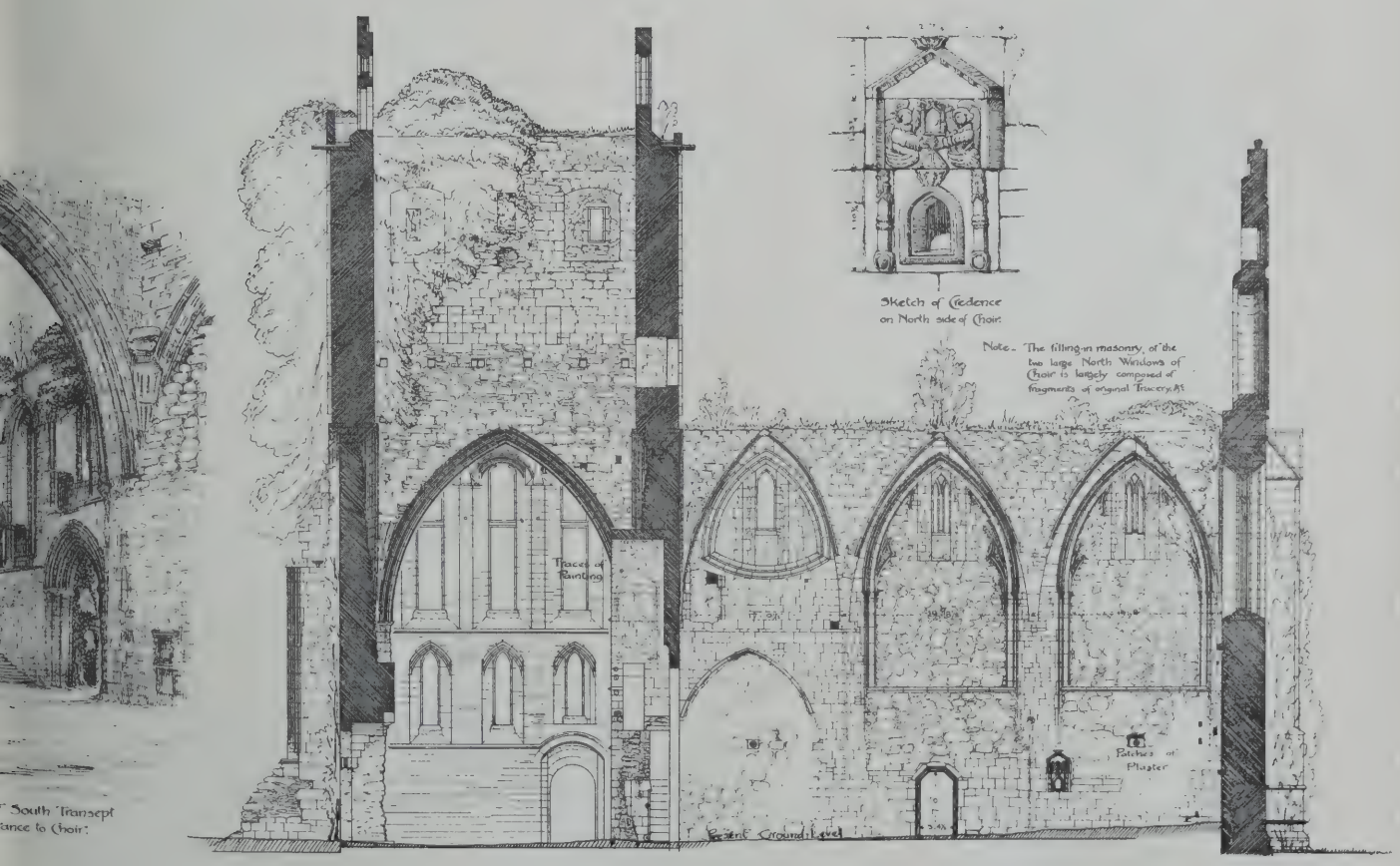
Section thro' Choir, and Tower, looking South.



dy Chapel and S. Elevation.



Section thro' South Transept.



Section thro' Tower, and Choir, looking North.

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E BUILDING NEWS
ID ENGINEERING JOURNAL.
VOL. LIX.—No. 1857.
FRIDAY, AUGUST 8, 1890.

ARCHITECT IN HIS RELATION TO CONTRACT WORK.

the designer and supervisor of a building, and as a general agent of the ved, acting between him and the con-r, the architect has many and important to discharge which fall to the lot of ther professional men. In his dual ty of artist and agent, he is presumed te within himself the natural talents ersatility of a Michael Angelo or a inci with the legal acumen of a ery lawyer. Can we wonder at the and disappointments of a few under assumptions? The meaning of "archi- has been vastly stretched to include a or, a measurer, a valuer, an engi- and goodness knows what else as We propose to discuss a few of bligations of the professional man. usually thought that when the is formally accepted, or the ct is signed, all difficulties are at an at the contractor has committed him- the requirements, and having signed ns and specifications, has made himself o all that is necessary, however imper- ey are. Surely that view is becoming erable. Courts of law and juries are look into any circumstance which s to be either unreasonable, or about any doubt exists. The common law le that no person can take advantage non-fulfilment of any condition the nance of which has been hindered by t is important to remember. For e, an employer or board cannot sue reach of covenant if he or they have filled any part of their duty to a con-t. If, for example, an architect or r has not supplied the necessary draw- specification in reasonable time, the tor is relieved of his obligation to te the works by the time specified. ie fails to set out the work the con- has a good ground for delay. We agine other circumstances—such as n the supply of materials which an er agreed to obtain, or indecision gard to any alteration which may en suggested after the contract had gned. These are material excuses any contractor might urge for not g out his contract.

nterpretation to be placed on draw- ad specifications is frequently a n of dispute. A clause usually t in contract conditions, to the effect case of any discrepancy between the gs and specification the architect is to which is to be followed, does not ily carry with it complete conviction mind of the contractor, nor prevent n referring the question to arbitra- The architect being the agent of the or is to a certain extent biased in his at; he is not likely to admit that the s are imperfect or inadequate. The on clause comes to the relief of the or in such a case which gives an appeal to architect's decision, to an arbitrator r to be appointed. Much may be argued ainst the reference about questions ind. Is it fair that questions about er meaning of drawings and specifi- should be included as one of the to be referred? Suppose, for ex- difference existed between dimen- ured in a drawing and those described pecification. Is a third party in a sition to decide? The contractor naturally thinks he is; the architect takes an opposite view. The dimensions may relate to the depth of concrete for foundations or to the thickness of a wall. The architect ought certainly to be the best judge of what is needed and what his intentions were; but he has no right to put the contractor to extra expense through his own fault in not clearly defining his intention. It appears to us that this is a point that ought to be settled between contractor and architect in each case at the beginning, so that a fairly-drawn arbitration clause should be inserted. There would be less litigation if it were so. As it is, a general arbitration clause is introduced relating to all matters in dispute, including any differences that may arise in reference to workmanship and materials, the meaning of drawings and specifications, claim for extras, certificates, and other matters. If the architect is arbitrator he must exercise his judgment in a reasonable manner, or his decision is likely to be called in question or be left to a jury, in which case the architect's opinion would be taken as that only of a witness for the employer. An appeal to an outside person is the course advocated by contractors, and is more desirable in large undertakings. It may be more reasonable to limit the architect's power to questions of materials and workmanship, and to interpretation of drawings and specifications, but to allow an appeal to be made by the contractor if he considers he is being severely dealt with, and on questions of prices to be allowed for extra works and deductions that have been sanctioned. Many of the arbitration clauses we have seen are framed in a manner which imply on the part of their framers, if we are to regard them as equitable persons, a very scrupulous accuracy in the documents prepared. Take, for example, the following clause in a form of combined specification and agreement adopted by the late Metropolitan Board of Works: "Should any discrepancies, however, appear, or should any misunderstanding arise as to the meaning or import of the said specification or drawings, or about the quality or dimensions of the materials, or the due and proper execution of the works, or as to the measurement or quality and valuation of the works executed under this contract, or as extras thereupon, deductions therefrom, or as to any other matter or thing whatsoever arising out of this contract, the same shall be explained by the engineer, and his explanation shall be final and binding upon the contractor; and the contractor is so to execute the work according to such explanation, and without charge or deduction to or from the contract." A following clause states that if anything necessary to the due performance of the works be omitted to be shown in the drawings or described in the specifications through oversight or error, the contractor is, notwithstanding, to execute in the most perfect and complete manner all such works without any extra claim or charge. Every question or matter is here referred to the engineer, whose decision is to be taken as binding. The effect of such a clause is obvious. The contractor takes care to protect himself from all liabilities that are likely to fall upom him, and to allow a good margin for extras, especially if he is aware of any imperfections and defects in the drawings and specification. On the whole, a moderate clause is more likely to meet with approval than one that is particularly stringent, and we are quite certain that among far-seeing contractors a large percentage is added upon contracts which are unreasonably severe in their requirements. We think, therefore, that a contractor should be permitted to appeal to a referee on completion of contract as to any increased cost to which he may have been put by the architect, whose directions he has obeyed under protest.

The question to which we have referred arises frequently whenever an extra is charged. The contractor claims as an extra whatever he does not find clearly described or indicated. If during the progress of a building it is found there is no mention of windows or doors, is it not reasonable to conclude that such things are absolutely necessary to complete a building? Surely the architect would have a right to decide that such things were intended or implied. So at least the law thinks, for in a certain case Mr. Baron Pollock decided that where no mention was made of flooring, the flooring of a house cannot be considered an extra any more than the doors or windows, as the contract said the house was to be made fit for habitation. Most contracts impliedly, therefore, give the architect power to determine what are extras under the contract, and his certificates are consequently conclusive; but if not, there are certain works implied in the rendering up of a building which cannot be left out, such as those to which we have referred. Many builders fall into the error of thinking that all work not specifically mentioned in the specification is excluded, whereas a certain sense of implication ought to be considered reasonable.

The "written order," as a condition-precedent to a claim for an extra, valuable as it is as a security against unnecessary cost, may be considerably reduced by a "waiver" of that condition. We have known the architect and employer to place implicit confidence in this condition of the contract, but the contractor has nevertheless carried out extra works from instructions given verbally by employer or architect—of course, relying on being paid. He finds, however, at the winding up of accounts that the architect demands the production of the written orders; a lawsuit follows, and a "waiver" is set up by the contractor. It may be difficult to determine what constitutes a waiver of the condition; but the Court may imply such a remission. If a thing absolutely necessary for the completion of the building is carried out and charged for without a written order, a Court would certainly believe a waiver established, especially if the extra works claimed for were outside the contract altogether, or became the subject-matter of a new contract. For example, it would be unjust to a contractor who followed the verbal instructions of an employer, and added another room or formed another cellar to a house, if the architect refused payment on the ground of the contractor not producing a written order. He may have been negligent in doing so, believing all the time that such instruction for additional work could not justifiably be disputed, or he may rely on the honesty of his employers. These irregularities in contracts are not always determined by provisions which can be proved to be severe or unnecessarily strict. The law places a reasonable construction upon them, or in their absence implies a condition.

Great strictness, therefore, in the drawing up of a contract, especially when it is on one side, will not be favourably viewed by a Court should any dispute be brought before it, and the idea of enforcing provisions that are unreasonable, or of making unfair contracts binding, is becoming less tenable. Judges and juries both look into the evidence and facts of each case, and if they think any provision or clause severe or unreasonable they relax it. On the other hand, if the contract is silent on any point, as, for example, the time of completion of a work, the law will imply a condition that shall appear reasonable. When, for example, there are circumstances which show that the completion of a contract work is of importance, and of the essence of the contract, as in the case of a railway under a special Act, the law will imply a condition. Strict rules of law are relaxed in Courts of Equity, so that contracts are now judged by an equitable construction rather than by strict

adherence to arbitrary stipulation. Architects and engineers, therefore, will do wisely to frame their conditions with moderation, and refer those points which are likely to be disputed to the arbitration of an independent referee.

HEAVY RAINFALLS AND BUILDING LEVELS.

A LARGE amount of responsibility rests with the authorities for the recent damage to property by the recent floods. An exceptional storm like that experienced a few weeks ago in London, and the southern and western counties of England, does not come within the ordinary calculations of engineers in preparing plans for sewerage. If they allow a certain margin of capacity in their sewers for extraordinary rainfall, they may consider their duty fulfilled, and they might argue with some reason that to increase the cost of construction, and therefore to place an additional burden upon the overtaxed ratepayer, for an exceptional occurrence like a storm of extraordinary violence would be unjust, if not unnecessary. But, as a matter of fact, the requirements of the large areas now built over in the suburbs of London have been very inadequately met. Sewers and drains have been constructed at great expense which are quite inadequate to meet an ordinary heavy rainfall of short duration, and which are now fully taxed by the extension of buildings. It must be remembered that the areas of rainfall have changed of late years. What a few years ago were acres of pasture-land with a more or less permeable soil have become built over; roof and paved areas have taken the place of flat, porous ground, and the flow of water is necessarily quicker and the discharge greater in a given time. In many districts 1c.ft. per minute per acre is a large flood. A maximum flood at the outfall of a great river like that of the Severn at Gloucester has, indeed, measured as much as 2c.ft. per minute from every acre of drainage land. It is the sudden rain-storm of short duration that the local authorities have to consider, and that tax the resources of the sewers. Mr. Symons has remarked that in every year a fall of at least ½in. in 30 minutes takes place somewhere in England and Wales. An extraordinary rainfall lasting only a quarter of an hour will amount to an inch, or at the rate of 4in. per hour, and such a fall cannot run away in the usual order of things. The drains already filled cannot receive any portion of the surplus, which then becomes so much flood or inundation over a certain area. There is no provision made. The surplus, which floods the houses and basements of low-lying districts, is really surface water which cannot be discharged by the sewers for the time being. There are only two remedies. The first is to provide storm overflows or reservoirs wherever practicable; the second to make the sewers large enough to retain the surplus water till the storm abates. The last plan is costly; the former commends itself to our common sense. The storage or regulation reservoir should contain the difference between the quantity of flood water the river can carry off without overflowing and the quantity of actual rainfall. The regulating dam should be made high enough to hold the water till the rain-water subsided. In towns, the necessity of providing reservoirs underground is apparent, and house drains should be provided with tidal flaps to shut off the back flow.

Legislation has yet much to do to render these extreme falls of rain harmless. For instance, the local authorities having powers under the Public Health Act might make it compulsory to provide special channels and drains for flood water. Natural streams in valley lines may be deepened or rendered spacious enough. The sanitary authorities should also decline to sanction plans of buildings on sites on the margin of rivers which cannot be drained; on no account should the excavation for basements be permitted. In the Metropolis, *e.g.*, we have lately been made aware of the serious inconvenience suffered and injury to property and health inflicted by the pernicious practice of allowing low sites, often on excavated ground, to be built over. The lower stories are placed on the excavated level without any precautions as to drainage. Sometimes these basement floors are below the high-water level; the consequence is that when a heavy rainfall occurs the lower stories are completely inundated. No provision is made for chambers with valves at the outlets to prevent floods backwatering the sewers. A district below the level of high water or land floods ought to be cut off from the higher districts by these means; but we find they are not so. When an extreme rainfall occurs the upper system of sewers, overcharged from the surface water, blocks the lower system, or in most cases the water forces its way into the lower sewers and up the house drains, so that the occupants of the houses get not only the flood water but a dilution of sewage as well to put up with. Many portions of Dulwich, Brixton, and Kennington suffer from this more dangerous form of flooding, leading to various kinds of sickness. The suggestions published by Sir Robert Rawlinson, K.C.B., for the Local Government Board, some years ago proposed, and illustrated by plates of sections, modes of averting the dangers of floods, but we may ask why they have not been practically enforced. Surely the County Councils of London and other towns have the matter in their hands. They can at least obtain powers to compel every builder of new estates to place his basement floors above a certain level, which could easily be regulated by reference to any Ordnance datum map, and to prevent the construction of underground parlours below a given level, which are so common a provision in London houses. Many of these are yearly flooded with diluted sewage and surface water, which, as it subsides, leaves behind it a filthy sediment or slime which gives out an unpleasant smell. During the late heavy storm, we know of several living rooms below the ground floor in which the water rose three to four feet high in the course of half an hour, causing the inmates to beat a hasty retreat to the upper floor. Tables, chairs, sideboards, and pianos were in some cases under water before they could be removed, and the underground stores of many houses of trade have been completely damaged. The question of basement floor levels ought by this time to have been dealt with effectually by sanitary authorities. We have by-laws requiring the sites and foundations of new buildings to be erected on solid ground and any refuse removed, the foundations to be formed of concrete, and the area covered with a layer of the same 6in. thick; another section provides that the lowest floor of every building shall be laid at such a level as will allow it to be properly drained; another requires cellars and underground rooms to have certain provisions if occupied as dwellings as regards area for light and ventilation; but, strange to say, not one of the regulations prevent a basement floor being placed so low as to be flooded at any conjunction of high tide and heavy rain. All the rules for controlling foundations and drains are useless if a floor is placed too low to be adequately drained; but such in fact is the actual and imperfect legislation that exists. It would be very easy to define the level of the lowest floor of every new building, and making it a by-law; but in many of the estates built over in districts that lie low, like parts of Wandsworth and Battersea, the cost of raising the ground or the found and walls would have been costly. W here the secret of the matter; the g would have been lying idle if such a r tion had been made. Surely, howev cost of rendering such sites healthy more importance to the community, would be better that they should r unbuilt over than that thousands poorer tenants of those localities suffer all the inconveniences of dan uninhabitable dwellings. The definit level of lower rooms certainly shou included in any amendment of b regulations.

MASONRY AND STONE-CUTTI

By Lawrence Harvey.

[THIRTY-FIRST LESSON.]

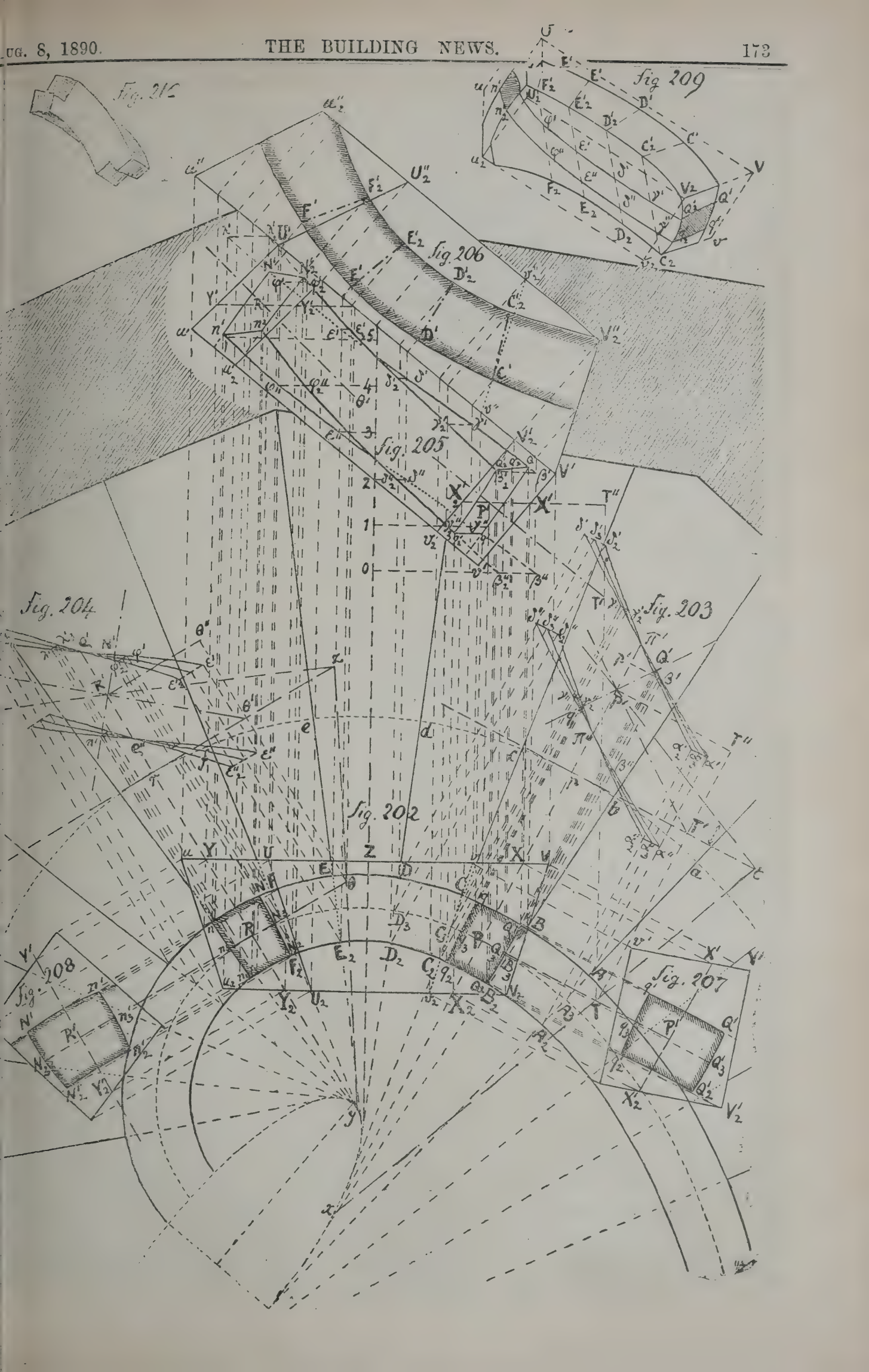
STRING OF GEOMETRICAL STAIRS.

LET (Fig. 202) the spiral *a b c d e f*. the treading line which best suits th of a certain staircase, and let it be div equal lengths equal to the widths of the let *a* A, *b* B, *c* C . . . the arrises of the be normal to the treading line, and let A be the inner line of the string in which t are housed, each point of which is take equal distance from the treading line. No two curves, the treading line and the c the string, have the same involute v formed by the series of points where the to the treading line meet one another. case, the involute is an ellipse. Takin $B B_2, C C_2, \ldots$: all equal to the width to to the string, the string will then be co between two vertical cylinders, which base the parallel curves A B C D E . $A_2 B_2 C_2 D_2 E_2 \ldots$ As to the up lower faces of the string, they are tw surfaces identical with that of th of the stairs. The directing hel these surfaces are drawn on the c which has for base the treading - l upper one slightly above the arr the steps, and the lower one slightly b soffit of the steps. The generators of th faces will also be projected on A A_2, B I . . . The string is divided in a certain of stones, and the joints are to be plane to the centre curve supposed to be drawn the stone. This central curve is the inte of the cylinder $A_2 B_2 C_2 D_2 \ldots$ equidista the sides of the string, with a skew surfa distant from the upper and lower face string.

Let P be the horizontal projection of on the centre curve through which the the joint is to pass. After drawing the g p P x, select a vertical plane of proje perpendicular to the generator p P generator will be projected thereon in o point P′ (Fig. 203), which place at th two risers; then take the distances P′ equal to half the height of the string. triangle P′p t carry the length of arc p base p t from the angle t, then produ tical until it cuts the side P′t, a the length of that vertical from π' to horizontal p' β' will be at the level generator B B_2 of the upper surface of th and therefore it is the elevation of that g Then draw at distances equal to the ris horizontals, $a' a'_2, \gamma' \gamma'_2, \delta' \delta'_2$; these are t tions of the generators A A_2, B B_2, C C_2, of the upper surface of the string. horizontal generators mark the elevatio points A_1, A_2, A_3, and B_1, B_2, B_3, w generators meet the lateral faces of t and the cylinder on which is placed t line; this gives the three curves a' $a'_2 \beta'_2 \pi' \gamma'_2 \delta'_2$, $a'_3 \beta'_3 \pi' \gamma'_3 \delta'_3$, which are the upper face of the string. Those of face, $a'' \beta'' \pi'' \gamma'' \delta''$, $a''_2 \pi'' \delta''_2$, $a''_3 \pi'' \delta''_3$, a by carrying on each vertical a distance a'

Now we have to find the plane tang skew surface, which follows the cent the string. Draw first tangent P′ t to t ing helix, and to do this take pt = then by sliding the generator (p P x, tangent and on the vertical x a connect boloid is formed, of which the horizo another generator. If, therefore, th plane P T (Fig. 202) is produced per

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Fig. 212
Fig. 209
Fig. 206
Fig. 205
Fig. 204
Fig. 203
Fig. 202
Fig. 208
Fig. 207

to line P x, this plane will cut the paraboloid along the line (P T, P′ T′) which defines the tangent plane P′ T′ T″, and is also the tangent to the centre curve of the string. The plane of the joint, which must be normal to the centre curve, will have for vertical trace Q′ P′ q' perpendicular to P′ T′; projecting on the bases of the three cylinders A B C, $A_2B_2C_2$, $A_3B_3C_3$, the points where the trace Q′ P′ q' meets the upper and lower curves of the string, the horizontal projection Q Q_3 Q_2 q_2 q_3 q of the outline of the joint is obtained.

Let R be another point on the centre curve through which the plane of the other joint is to pass; after taking (Fig. 204) a vertical projection plane $r z$ perpendicular to the generator R y, and projecting thereon the generator on one point R′ at the level of two risers above the ground line, mark the height $\rho'\rho''$ of the string equal to that adopted in Fig. 203, and construct the upper and lower curves of the string near the point (R R′); then draw the tangent R′z of the guiding helix, and deduce therefrom the tangent (R′ θ', R θ) of the central curve of the string, and the normal joint plane N′ R′ n'. Lastly project on the bases of the three cylinders the points where the trace N′ R′ n' meets the curves of the string and the horizontal projection N N_3 N_2 n_2 n_3 n of the joint is obtained.

By the former projections the shape of the string-stone is fully determined: it remains to project the entire stone on one single plane. Draw (Fig. 202) two vertical parallel planes X Y, X_2 Y_2, containing the horizontal projection of the stone; then project the stone on the plane X Y. To do this, mark on vertical Z the divisions 0, 1, 2, 3. . . . equal to the heights of the risers (Fig. 205); then taking through these divisions horizontal lines, and projecting thereon the points B and B_2, C and C_2, D and D_2. . . . draw the curves

$$\beta'' \gamma'' \delta'' \varepsilon'' \phi'' \lambda'' \text{ and } \beta''_2 \gamma''_2 \delta''_2 \varepsilon''_2 \phi''_2 \lambda''_2,$$

which limit the lower face of the string. Those of the upper face will be deduced from the former by prolonging each vertical by a length $\beta'' \beta'$ equal to the length $\pi' \pi''$ in Fig. 203.

The point P′ (Fig. 205) is on the vertical erected from P, and it is at a level below β' β'_2, equal to P′ p' of Fig. 203. Project the point T in T″ on the horizontal P′ T″ of Fig. 205, take T″ T′ equal to the length of same designation in Fig. 203, the line P′ T′ will be the projection of the tangent to the central curve of the string. Then project in X′, X'_2 on the horizontal P′ T″ the points X and X_2 where the medium line of the joint projected in X P X_2 cuts the vertical planes X Y and X_2 Y_2, and draw through these points X′ and X'_2 (Fig. 205) two perpendiculars to the tangent P′ T′. This will give the intersections of the side faces of the operation-stone with the plane of the joint. The operation-stone is limited above and below by the parallel planes U′ V′ and u' v' perpendicular to the vertical face X Y, and comprising between them the elevation of the stone. Now, to obtain the curves of intersection of the joint plane with the four faces of the string, project the points Q and Q_2, q and q_2, on the upper and lower curves to which they belong; the mid-point Q_3 must be projected at a level above β' β'_2 which is shown in Fig. 203, and it will be the same for q_3; then, the mid-points of the lateral curves Qq, Q_2 q_2, will be on the horizontal X′ X'_2, and through all these points the curved outlines of the intersection can be drawn.

The same operations will have to be done for the joint passing through the point (R, R′) in taking Fig. 204 all the differences of level from the horizontal ϕ' ϕ'_2; to define the plane of the joint, the perpendiculars to the tangent R′ θ' shall be taken through the points Y′ and Y'_2 (Fig. 205) deduced from Y and Y_2 on plan (Fig. 202). The operation-stone, after the joint planes are worked, is reduced to a prism, the ends of which are oblique planes.

Fig. 206 represents the intersection of the upper face V′ V′ of the stone with the vertical cylinder B C D E F L and B_2 C_2 D_2 E_2 F_2 L_2. To obtain these curves, prolong the verticals Cγ', $C_2\gamma'_2$, Dδ', $D_2\delta'$ $D_2\delta_2$, . . . until they meet the line U′ V′, and turning down that face round the lines U′ V′ the points will come to C′, C'_2, D′, D'_2, . . . at the same distance from U′ V′ as C, C_2, D, D_2 from the line U V on plan.

The intersections of the lower face u' v' are identical with those of the upper, and, therefore, the plane u' v' is supposed to be raised to the level of the upper plane, and the traces of the cylinders already drawn serve for both planes.

On Fig. 207 is represented the head-mould of the operation prism, intersected by the faces of the string; it is a projection with X X_2 as ground line. To produce this, take on line P P′ a point P′, draw through it a parallel to the ground line X′ P′ X'_2, from which carry the differences of level of the various points taken from Fig. 203.

On Fig. 208 the head-mould of the other joint has been drawn by the same process.

Application of the Lines on the Stone (Fig. 209).—Work first the prism, of which dimensions are given, Fig. 202 and Fig. 205; on the upper and lower faces place the moulds given in Fig. 206, then work the end joints V V_2 v_2 v and U U_2 u_2 u. After this, work the concave cyclinder by means of the curves $C_2D_2E_2F_2$ and $C'_2D'_2E'_2F'_2$, laying on these curves a straight-edge through the points C_2 and C'_2, D_2 and D'_2; then work likewise the convex cylinder. Now, on each generator of these cylinders carry the lengths $C_2\gamma''$ and $C_2\gamma'$, $D_2\delta''$, and $D_2\delta'$, measured from Fig. 205, and with the help of a flexible straight-edge, draw on the concavity of the cylinder the curves $\gamma''\delta''\varepsilon''\varphi''$, $\gamma'\delta'\varepsilon'\varphi'$; draw likewise the curves of the string on the convex cylinder. Then the upper and lower faces of the string can be worked with a straight-edge laid on the level points $\gamma'\gamma'_2$, $\delta'\delta'_2\gamma''\gamma''_2$.

Sometimes the joints of the string have elbows, as in Fig. 210; but it is easier to have a joint in one plane and connect the stones by dowels.

On the convex side of the string the outline of the steps must be drawn, by means of a development, and must be cut in about ½in., in order to house the ends of the steps in the string.

A marble handrail would be worked exactly in the same way as the string; first with a rectangular section, then the mouldings would be cut out from this operation helix by means of templets.

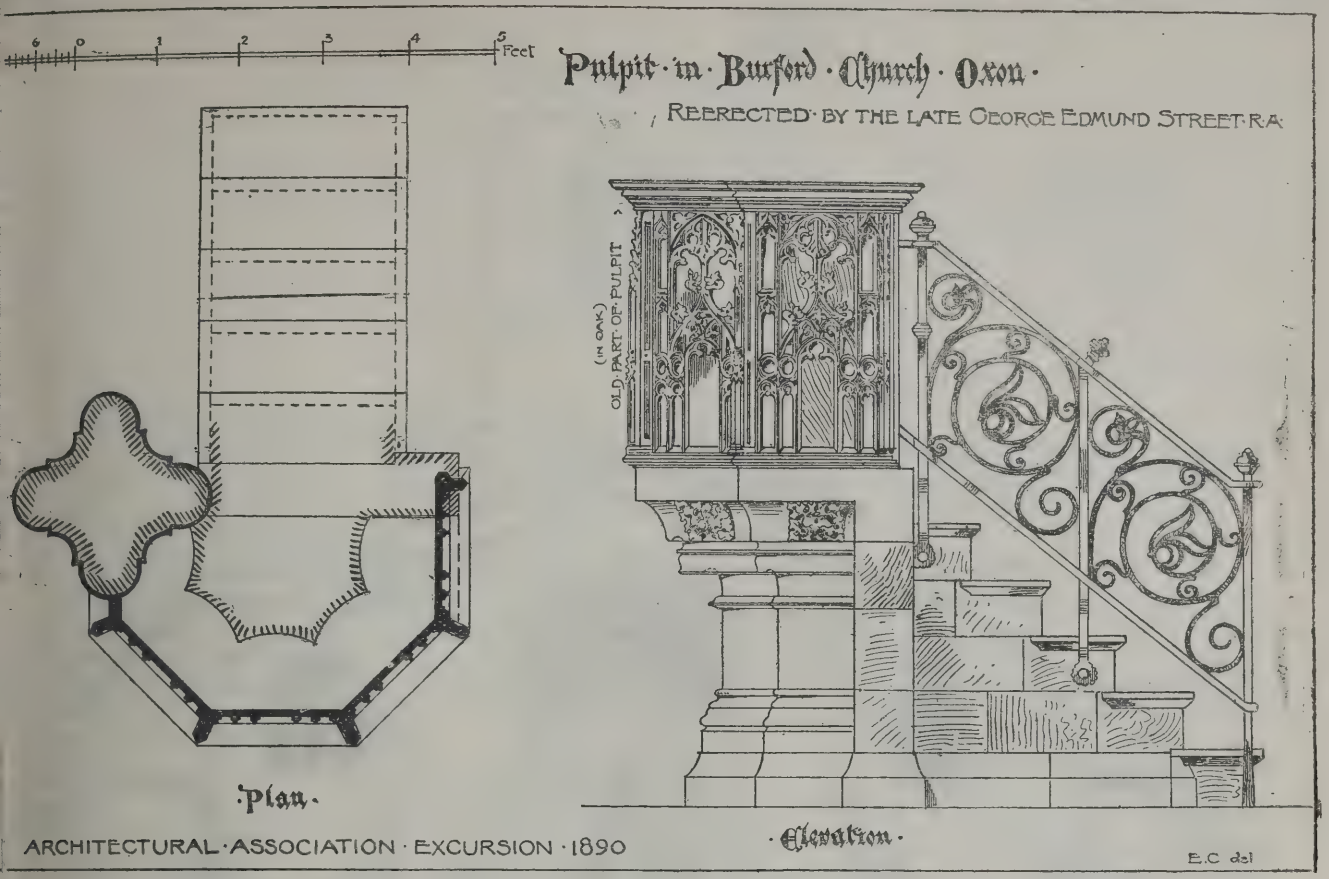
ARCHITECTURAL ASSOCIATION: EXCURSION INTO OXFORDSHIRE.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

ON Monday next the annual excursion of the Architectural Association will commence the proceedings by visiting several of the colleges and churches in Oxford, and during the week the chief buildings in the south part of the country will be seen, in accordance with the programme which we printed in our issue for July 25 last. We give to-day some drawings from Burford, showing the grand church and the unique Priory chapel in the nave, as well as the undercroft to London House, in the High-street, of the same village. The latter illustration is from a sketch by Mr. W. A. Pite, and the geometrical drawings are reproduced from the original plans of the late Mr. G. E. Street, R.A., who restored the church. We are indebted to Mr. A. E. Street, M.A., for their loan on this occasion. Some few years since, when visiting Burford, we made some sketches there (see BUILDING NEWS, September 25, 1885, for drawings of the Priory and of ruined chapel attached), and to-day we publish one of these studies, giving a view of the great porch with the fine parvise over it, the central tower and south transept, showing to the end of the Burgess transept, and part of the Bartholomew aisle, with one bay of the Sylvester aisle to the left of the fore-part of the picture. In finishing our sketch we have been assisted in its details by some photographs taken on the same occasion by Mr. John L. Robinson, A.R.H.A., of Dublin. Several of the old houses in Burford were represented in a double-page sheet of illustrations which we published in the BUILDING NEWS for August 7, 1885, from pencil studies, also by Mr. Pite, on the eve of the Architectural Association excursion to Banbury and north-west Oxfordshire. These were followed by a series illustrating places then visited.* At that time we made a copy of the late Mr. Street's report on Burford Church, dated March 23, 1870, and we are thus enabled to accompany our illustrations to-day with his most interesting description, which has never before been published. It runs as follows, and was addressed to the Rev. J. H. Burgess, the vicar:—

"In sending you the plans and specifications for the restoration of your magnificent parish church at Burford, I am anxious to explain some of their principal features; as, unfortunately, I find it will be impossible to do so by word of mouth at your meeting on the 29th. I must begin by saying that there is in my opini church in the whole diocese of Oxford exceeds it in beauty and architectural interes is not only that in scale it is grander tha other parish church, but also that in its arc tural detail it is singularly rich and beautiful Oxfordshire, where we still see such churc those of Bampton, Witney and Bloxham, i slight thing to say that Burford is on the more interesting than any of them, and it fortunately at a disadvantage in comparison ing that they have been restored whilst it calls still for restoration. And here I wish in a few words what I mean by the use word 'restoration' in connection with building. I wish, as far as I am concern confine the work which I shall do in it, most rigorous manner, to preserve the solid and exhibiting it with as little alteratio addition as possible of any feature which all conjectural. I do not at all agree church restorers who allow their work to all over the face of an old building. stonework is only slightly damaged or imp no good is done by patching or renovati Where old features have in part disappea *e.g.*, the pinnacles of your south porch and aisle, it is wise to restore them, because exist which show exactly what they ori were. And again in the western gable, of the niche and pinnacle on the apex rem make it no difficult task to design its comp But cutting out only slightly damaged st order to put perfect stones in their place, cl and redressing old stones which have o face the weather stains of age, or allowing work to be cleaned of whitewash with a tool in such a way as to alter the old face stone and its mouldings, is to destroy the value of the building as a record of the art a tory of the past. My object will be to alter old, but simply to show it to as much advan I can by repairing it where repair can avoided, and removing modern additio excrescences which conceal and dimin beauties. Fortunately, there are few chu which, thanks to the excellence of the m there is less difficulty in carrying out a rest in this spirit than Burford church. And its shape undoubtedly presents great diff in the way of good arrangement, they ap me such as may be overcome if I am all deal boldly and at the same time sensibl such arrangements. Let us now explain t in which I propose to arrange the inte worship. This is no doubt a great difficu it was one which was met in the best way 15th century, and I propose simply to fol example then set. And here I must prem the present very singular ground plan church is not merely ordinarily irregu difficult to deal with. Its present shap fact, the result of joining together of two distinct buildings, one of them even bef having been very irregular in its plan. no doubt that, originally what is now ca Sylvester aisle was a chapel standing detached from the church. It was founde 13th century, and was not joined to the by the opening of arches in the north w the 15th century, when it was also leng eastward. The result is that your mag porch, one of the finest works of its kind in England, which was at first partly deta now completely imbedded between this cha the western of the two south transepts. time this was done I believe that the inconvenience of the narrow arches un central tower was pressing itself on the mind. Services were probably becomin popular, and it was found to be necessary it is now to make the church available for congregation assembled at one time at one It was found that the altar at the east en chancel was so far off and so cut off f church by the low tower arches, that as f congregation in the nave were concerned almost have well been another building. it was desired to remedy this state of t most ingenious plan was devised, to whic pose again to have recourse, and of which of no other example. This was the erect chapel with an altar under the eastern ar north arcade of the nave, surrounded by work and covered with a canopy or teste most interesting to observe that from th more people are seen than from any oth in the church. It is a spot so ingeniously that the double row of columns betw

* BUILDING NEWS, Aug. 14 and 21, 1885.



ter aisle and the nave presents hardly any ction, falling as they do one behind the if lines are drawn from the point of the towards the south-west. And it is very s that so much of this rare arrangement l still be preserved intact. It has, I believe, een known as the Priory Pew, but here in ew, with its canopied ceiling, I have no we have the 15th-century people's altar of rd. And it seems to me, as I hope it will rford people of the present day, that the ation of the altar in this chapel is the on-sense solution of the greatest difficulty exists in regard to the restoration of the n. I should, of course, not propose to move ar from the chancel, but I think it might e used for service at which none but Com-ants are present, such as early celebrations y Communion, whilst for the midday ser-n Sundays and great Festivals an altar in iory chapel might be used, so as to allow service being joined in thoroughly by the of the congregation in the western part of n. As regards the position of the choir I am inclined to recommend that their old in the chancel should be retained. In cases I have found that singing is per-well heard all over the church from such a n, and as far as I could ascertain the effect eriment, I did so when I was at Burford, th satisfactory results. The Bartholomew would afford a very good position for the near the choir, and where space would of value for congregational services. I e to seat the church generally with simple seats, but under the tower and in the o use chairs. The tower arches confine ce so much that it would not be easy to xed seats here, and chairs have the advan-being easily movable, so that people may em to the pulpit or the altar according to ish. For the same reason that dictated n for the people's altar, I would place the against the second column from the east north side of the nave. From this point ole of the nave, most of the Sylvester he south transept, and the space under the s well commanded."

rest of the report concerns heating the Mr. Street also advises the opening up of tern in the central tower into the church. rare feature in Romanesque work. The l was re-roofed and the ancient altar was ted by Mr. Street, who restored the chapel, its stone altar and dossal. He also beautifully redecorated it, setting out part of the ornamentations himself on the spot. Since the death of Mr. Street, Mr. Sedding has done one or two minor works of restoration, about four years ago. The plan printed with our sketch herewith explains the remarks in Mr. Street's report. It is a copy of the plan he had made from careful measurements.

Below the south aisle of the church there is an interesting undercroft, which was formerly used as a mortuary chapel, and forms above a sort of raised gallery as indicated by the plan. Similar instances of undercrofts exist at St. Mary's, Witney, and Dorchester Abbey.

Next week we shall give an illustrated report of the Excursion proceedings.

ST. MARY'S CHURCH, LONG CRENDON, BUCKS.

By Frederick George Lee, D.D., F.S.A.

LONG CRENDON, situated on a hill two miles north of the town of Thame, Oxon, is notable for its long and varying chief street, more than half a mile in length; for the picturesque character of several of its old houses, though many of these, of late years, have been either destroyed, re-faced, or mauled; for the ancient but altered Tudor manor-house at its extreme west end, as well as for a still earlier building, known as "Staple Hall"—of which a sketch is provided—adjoining the parish church, at the extreme east end and upper part of the village.* For Crendon is now only a village, though anciently it was a market town,† the centre of a large wool trade, and a place of considerable importance.

The chief building remaining is, of course, the church, occupying a remarkably prominent position, close to the long-destroyed castle of the Giffards,‡ and commanding a beautiful view over Crendon Park. Like most other churches, it has suffered from neglect, bad restoration in previous periods, local prejudice and parsimony, indifference, and loss of church-rates. But its recent restoration—undertaken last year—is an abiding credit to all those who so successfully combined to effect the same.

There is no space in which to trace the history of the manors of Crendon—a history somewhat tangled and confused. The abbots of Notley owned a moiety, and so did Sir John Dormer, descended from the family of the same name, of West Wycombe and Thame. Sir John, as his predecessor had done, made a large fortune as a wool merchant of the Staple of Calais—"Staple Hall," in Crendon, remains as depicted. Mr. Dodwell, of the Manor House, is one of the Lords of Crendon; while All Souls' College, Oxford, possesses likewise ancient manorial rights.

The church, dedicated to God in honour of the Blessed Virgin, is cruciform in plan, with porches, having stone sediles, on the north, south, and west sides. It consists of nave, with north and south aisles, choir, north and south transepts—each of these latter being entered from the aisles, as well as from under the tower.

The central tower, itself of three stages, with a sexagonal turret for stairs at its north-west corner, is embattled, massive, and well-proportioned, and has Late Second-Pointed, or perhaps very Early Third-Pointed, windows in its belfry; other windows, having angle-headed hood-mouldings,* on the belfry stage below.

The extended view from the top of this tower is almost unsurpassed for diversity, range, and beauty. Though Buckinghamshire lacks the wild mountain scenery of Devonshire, Derbyshire, and Cumberland, yet for pastoral variety, including the beautiful Chiltern Hills, and their beechen woods, it is in parts unsurpassed. The greater part of the whole range of the hills in question, the rich vale of Aylesbury, the two Kymbles, *Magna* and *Parva*, near Hampden House, and the Mansion of Chequers, near Velvet Lawn, together with the Hill of Whitchurch, the woods of West Wycomb, the broad valley in which Oxford lies, the Wittingham Clumps, and the Berkshire Vale of the White Horse, can be

* "Staple Hall" was, no doubt, originally a mansion of the Dormers of Thame and Crendon. The lower part, on the left-hand of the sketch, is the hall; that part to the right, recessed, is the kitchen, pantry, and bakehouse. The hall on the upper floor is long and capacious, in which packs of wool were kept. The late Mr. J. H. Parker, C.B., of Oxford, held that the building was considerably older than the period of Henry VII. It has been much altered of late years.

† A market had been granted, A.D. 1218, to William Earl Marshall, a benefactor of Notley Abbey.

‡ Walter Giffard, Lord of Longueville, in Normandy, came over with the Conqueror, and obtained the Earldom of Buckingham. He built a castle at Crendon, and was lord of the place. Walter Giffard, his son, died in 1102; a second Walter died in 1164. (Arms: gules, three lions passant, argent, armed and langued azure.)

* There is an Early English window, *circa* 1220, at Uffington, co. Berks, of the same angular form; but, of course, the tracery differs, the Crendon windows being of a later date.



all distinguished on a fine day from the tower of Crendon Church.

Originally the sacred edifice was built in the Early English or First-Pointed style, many traces of which, more especially in the chancel and north transept, still remain. The lancet windows on each side of the former are very simple and of excellent proportions, with plain but effective internal hood mouldings, terminating in carved heads and ornaments. The east window, of old, consisted of three lancets, deeply recessed, and with internal detached pillars of Purbeck marble, and handsome capitals and bases; but these, having gone to decay, were removed in the last century, as tradition asserts since 1740, and a domestic window, with wooden transoms, inserted. This latter has been recently removed; while, in its place, a Second-Pointed rose window has been inserted, after a beautiful early type remaining in the north wall of the north transept.* The east window of the choir has been recently filled with stained glass by Mayer, of Munich and Bond-street, at the cost of Mr. Herbert Dodwell, of Croft House†, in memory of his mother. This window contains the following subjects, beginning with the north light: The Birth of Our Lord, His Baptism, the Crucifixion (in the central light), the Women at the Tomb on Easter morning, and the Ascension. In the centre of the rose above is an *Agnus Dei*, with adoring angels and archaic flowers. It is, perhaps, on the whole, somewhat heavy in colour, wanting more white glass; but the tints of it are rich and mellow, while the design on the whole is good and effective. It is, however, decidedly of a German, rather than of an English, type.

The original well-conceived ground-plan of the church appears to have been adapted in all the various changes which have been made since the church's first foundation. The north transept was altered by some Second-Pointed work, as was the north aisle. The south aisle is mainly Early Third-Pointed, as are parts of the nave. The windows throughout the church are generally good; those in the south transept, however, where the vault of the Dormer family remains, with an elaborate and splendid monument of Jacobean work, being of Debased Perpendicular.

The great lack in the building is a clerestory, with good clerestory windows. Such being wanting, the internal effect, though marvellously improved by the recent conservative and judicious restoration, under the advice of Sir A. Blomfield, A.R.A., is perhaps still a little disappointing. By it, and because of it, however, the church is marvellously improved.

Up to the year 1835 there remained an excellent and almost perfect Third-Pointed oaken rood-screen (the loft and rood having been destroyed under King Edward VI.); but this was taken down, its panels having been made use of to inclose a lay-rector's pew on the south side of the chancel. This pew, however, has since been removed.

The tower in times past, *circa* 1626, was found to be somewhat unsafe, so its pillars were strengthened and recased, while the transept arch into the south aisle was blocked up, so as to form a buttress to the western side of the tower.

The level of the nave was raised about the same time. Under the recent restoration, however, the ancient levels have been again secured, for the bases of some of the pillars were hidden.

The freestone font, of a deep and rich yellow tint at the west end of the south aisle, forming a baptistery, is handsomely carved, and of an Early Third-Pointed character. Heads of saints and angels are represented in a series of sunken quatrefoils round its capacious bowl, while its base are four sculptured lions seated vine-leaves. Its oaken cover is modern, after a poor Jacobean model.

There is an Early English *piscina* in the wall of the chancel, of simple design, with shelf for the crewets above, and two curio minations of hood mouldings, quaintly c There is likewise a low stone sedile on both of the sanctuary for the attendants at the The arrangements of the east end are decen the general effect of the sanctuary very fai

A Second-Pointed, crocketed, and ca tabernacle* in the north wall of the north a portion which originally formed part Lady-chapel; for the Lady-altar, is belie have stood against a screen at the east this aisle—is effective and fairly well pres It contained an image of the B.V.M. a Holy Child prior to the Tudor changes, they were destroyed.

Here, too, was a plain rectangular I Window, the outline of which may, from the church, be still very distinctly traced. now filled up with stones.

The destruction wrought in Crendon Ch two notable periods of its history was som remarkable. Under Edward VI. and Eliz the sacred building was cleared out of alm its ancient furniture, altars, plate, pi hangings, and sculpture. When the Commissioners (headed by Sir Edmund Pe and Francis, Lord Russell) were found confiscating and removing its movable co certain of the chief people then living parish, in order not to allow all the pa *ornamenta* to be unjustly confiscated, too to help themselves, and did so unrebuked. Hart, of Brill—a village adjoining—a Ca has left on record how this popular po plunder succeeded; while, during the subs Rebellion of the next century, as Crend

* Anciently—as Browne Willis, the Bucks antiquary, has put on record—the lower parts of this north transept window contained armorial shields with badges and rebuses of the founder, various benefactors, and abbots and officers of the adjacent abbey of Notley in Crendon Park. But of these shields not a fragment nor trace now remains.

† In this house, at the west end of the village, parts of which appear to be as old as the time of Henry VI., but which has been sorely and badly undermined, divided, and broken up resided Sir James Croft (Comptroller of the Household of Queen Elizabeth), who became the third husband of Lady Williams of Thame. This lady was the fourth daughter of Thomas, Lord Wentworth, by Margaret, daughter of Sir Adrian Fortescue of Salden, Co. Bucks, Knt.

* There is an almost similar tabernacle at Kid Oxon, *circa* 1450, and another at Handborough same county, of precisely the same type, but o date.



lace of strategical importance, situated between ford, Thame, and Aylesbury (the very centre the struggle between Monarch and a warlike tion for several years)—it suffered most erely by destruction, tumults, military exac- ns, and social and material devastation.

The late Sir John Aubrey, Bart., informed Rev. Samuel Lysons, the author and well- wn antiquary, that Crendon had not recovered former and great prosperity, even far into the gn of Queen Anne. "Whole families were ned by requisitions, and by the fact that for rs the land remained uncultivated." The urch for more than two years had been used a receptacle for food for the Cromwellite liers; and their provisions and "horse-meat," well as the horses themselves, were for some e sheltered there. The church tower appears ave been made use of for military operations observation.

The population of the place—very considerable en the Abbey of Notley was flourishing*—is l to have been reduced to 785 in Queen Anne's gn. In the year 1810, a century later, it od at 989; now it has increased to 1179. For year 1776 the cost of maintaining the poor exactly £208 12s., whereas now the annual rges, as I learn with surprise, amount to e than £2,000.

The monument to Sir John and Lady Dormer, he south part of the south transept, is a very orate specimen of Jacobean work. There are recumbent figures, lying facing eastwards, on altar-tomb, under a deep, semicircular canopy, rned in accordance with the taste of the period question. Sir John Dormer is styled "of ton"; his lady was "one of the daughters ohn Gyffard, of Chillington." She died the Sept., 1605; he on the 11th of March, 1626. onderous oak screen separates this transept— w used as a vestry—from the church.

There are a few other monuments remaining, ple slabs, but of no particular character nor rest. Amongst these are stones to the nory of William Langbaine, of Queens' Col- e, Oxford; to members of the old races of non, Burnham, Stone, Warner, Winter, and rs. There are also two memorial brass res, but these are very much worn and ilated.† At the opening of the ground in nave several years ago, for purposes of inter- t, the body of a monk of Notley, sewn up in folds of stout leather, was discovered much decayed. But the bones are said to have been perfect, the cowl almost complete, and the beads and cross of a boxwood rosary were found undecayed by the side of the skeleton. It was found in a brick grave vaulted.

The following is a list, taken from the registers, old wills, and other deeds and documents, of the Perpetual Curates and Vicars of Crendon:—

	A.D.
William Walker	1517—1525
John Thame	1530—1534
James Hunt	1534—1536
Bartholomew Green	1536—1538
Valentine Bownd	1538—1550
James Chernock	1550—1557
John Trulove	1558—1564
Edmund Osborne	1565—1611
Francis Lee	1612—1628
William Crouch	[?] —1650
William Jeamson	1656—1666
Edward Goode	1667—1671
William Yates	1673— [?]
Thomas Yates	1680— [?]
Thomas Middleton	1682—1693
William Clerke	1693—1721
James Fynes	1722— [?]
Harry Cole	[?] — —
William Bertie	1729— [?]
John Newborough	1747—1783
William Newborough	[?] — —
John Holland	1795— [?]
Thomas Hayton	1823—1887
Frederick E. Ogden	1888— —

The two last have been styled "Vicars."

It is traditionally asserted that the five bells of Notley Abbey, about the year 1540, were, at its dissolution or soon afterwards, transferred to the tower of Crendon Church. The tenor bell of that peal is said to have originally weighed two tons. In 1632 three bells were added at Crendon to make up a peal of eight.* In 1768 the whole of these were re cast by Lester and Packe, of London, now a most excellent and truly melodious peal.

The following inscriptions occur on the bells:

Treble—	Although I am but light and small, I will be heard above you all.
2nd Bell—	Although but small, our tones are good.
3rd—	Peace and good neighbourhood.
4th—	Music is medicine to the mind.
5th—	Our voices shall, with joyous sound. Make hills and valleys echo round.
6th—	To honour both of God and King, Our voices shall in concert ring.
7th—	Ye ringers all That prize your happiness, Be sober, merry, wise, And you'll the same posses.
Tenor—	In wedlock bands, All ye who join with hands, Your hearts unite; So shall our tuneful tongues Combine to laud the nuptial rite.

The recent restoration, under Sir Arthur Blomfield, mainly confined to the nave and aisles, in which the roofs and floors have been well restored, enables the spectator to appreciate the dignified character of the venerable building, with its fine ground-plan and excellent proportions. Galleries, deal pews, and lumbering reading-desk have been one and all swept away; so that the interior now presents an appearance the very opposite to that which it bore before the restoration: thus affording a good and trustworthy idea of its original character.

CHIPS.

The extensive premises of Mr. W. Sayer, 86, New Kent-road, were destroyed by fire on Tuesday morning. A long range of timber and brick sheds, used as workshops and stores, were burnt to the ground, together with their contents.

The Theatre Royal at Glasgow was reopened on Monday, after partial reconstruction, from plans by Mr. C. J. Phipps, F.S.A. The roof has been lowered 7ft., and the gallery and upper circle a similar space, and by the removal of the boxes at each end of the upper circle this part of the house has been brought into horseshoe form. Behind the dress circle the boxes have also been removed, and the space transformed into a family circle. There has likewise been an augmentation of the rows in the orchestral stalls, and the entire theatre, which will now hold 2,600 people, has been redecorated.

The committee of the Institution for the Blind at Plymouth have adopted plans by Mr. Snell, of that town, for the enlargement of that building by the addition of a wing. The exterior will be two stories in height, and will consist on the ground floor of a workshop 60ft. by 20ft., and above this is a dormitory for 20 beds.

The County Council of Staffordshire have referred to a committee the question of providing a council-hall and offices with powers to obtain plans from architects for submission to the Council.

On Wednesday week memorial stones of a new schoolroom for the United Methodist Free Church, Hightown, Crewe, were laid. The plans have been prepared by Mr. Geo. E. Bolshaw, of Lord-street, Southport, and the school is being built by Mr. A. P. Cotterill, of Crewe. The cost is estimated at £1,300.

† There were no less than "six hundred houselling [illegible]"—that is, those who received the Communion—in [illegible] ear 1517.

Mr. Haines, in his valuable "Manual of Brasses," [illegible] the following: "John Canon, 1460, and with Agnes, [illegible] with 3 sons and 8 daughters, Nave, Long Crendon." [illegible]ondon and Oxford: 1861.

* Some of my readers may be glad to learn that a volume on the "Bells of Buckinghamshire" has been completed by a very competent hand, that of Mr. Heneage Cocks, of Great Marlow; and that the book is likely to be published during the ensuing season.

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ILLUSTRATIONS.

THE "QUEEN," "FIELD," AND "LAW TIMES" OFFICES IN BREAM'S BUILDINGS.—CHURCH OF ST. JOHN THE BAPTIST, BURFORD, OXON.—"ET VERBUM CARO FACTUM EST."—COTTAGE NEAR EAST GRINSTEAD.—CONGREGATIONAL CHURCH AND SCHOOLS, QUEEN'S PARK, W.—ST. MARY'S CHURCH, LONG CRENDON, BUCKS.

Our Illustrations.

NEW PUBLISHING AND PRINTING OFFICES FOR THE PROPRIETORS OF "THE QUEEN," "THE FIELD," AND "THE LAW TIMES" NEWSPAPERS.

This building has been erected by Messrs. Dove Bros. from the designs and under the superintendence of Messrs. Satchell and Edwards, architects, who, without indulging in costly details, appear to have aimed at producing a constructionally sound substantial edifice, well lighted throughout, and practically suitable for its special requirements. The 200ft. frontage is of Portland stone and red Fareham bricks, the two lower stories being entirely of the former material, massively treated as an arcaded basement, the two side elevations being arranged to harmonise with the front. The slightly projecting wings at either end are surmounted by cupolas covered with lead. The basement contains a boiler-house fitted with two of Galloway's boilers, an engine-house with one pair of horizontal engines 125 indicated H.P. for electric lighting, two beam-engines 80H.P. each, machine printing-room, 110ft. by 49ft., being 32ft. high in the centre and 20ft. at the sides, covered with an iron glazed roof; folders' room, 77ft. by 25ft.; an insetting-room, 47ft. by 27ft.; Mr. Wood's (the engineer) room, an engineer's workshop, a roller-room, a paper-store, 38ft. by 38ft; a mess-room with kitchen adjoining. The ground floor consists of a large room, 50ft. by 19ft., at present unappropriated; the publishing offices—viz., for *The Queen* and *The Field*, 38ft. by 27ft.; for *The Law Times*, 27ft. by 25ft.; office for advertisements, 27ft. by 26ft.; and the "Early Publishing Department," 47ft. by 27ft. A covered roadway leads from the street by the side of the latter department (for loading vans) to the rear of the premises. The principal handsome staircase, with a waiting-room at the foot of same, conducts to the well-lighted arcade corridor on the first floor, which extends almost the entire length of the building, and leading from which is Mr. Horace Cox's room, with his secretary in the adjoining apartment. There are eleven editors' rooms, also a waiting-room, attendant boys' room, and a library. The second floor contains a room 130ft. by 30ft., and one leading out of same 32ft. by 25ft., capable of accommodating 150 compositors; these rooms are faced with white and red glazed bricks, and lighted on both sides by a succession of windows. Mr. Phillips' room and his clerk has also store-rooms. The third floor affords similar accommodation to the second floor, and is also lighted by top skylights, having a foundry and seven readers' rooms, store-rooms, and kitchen. The roof, with a photographic room thereon, is constructed as a fireproof flat, covered with Claridge's patent asphalte. There are spacious warehouse rooms on the respective floors at the east end of the building. Two stone staircases are provided at the east and west ends. The floors throughout are of fireproof construction (Homan's patent); these, with the structural ironwork, have been erected by Messrs. Homan and Rodgers. Generally they are covered with Mr. Roger Lowe's pitch-pine blocks, but in the basement and some other parts Stuart's Granolithic paving has been adopted, the first-floor corridors being laid with marble mosaic, the ground-floor mosaic being executed in vitreous work. Two hydraulic lifts, suitable for passengers and goods, are placed, the one in the centre, the other at the east end of the building. There is also a lift for the conveyance of papers from the ground floor to the basement paper-store, and two hand lifts from the publishing department to the compositors' rooms. Speaking tubes are fitted to and from the heads of the several departments, also electric bells. Hayward's lights have been extensively and successfully introduced at various points of the premises. The lavatory arrangements, which are to be found on every floor at both ends of the building, have been carried out by Mr. George Jennings. The gas has been laid on throughout the building by Messrs. Hart, Son, and Peard, who have also supplied most of the fittings. The wrought-iron chandeliers on the first floor and the Wenham lights on the ground floor, also the wrought-iron railing on staircase and outside, have been executed by Messrs. Starkie, Gardner and Co. The electric light service and fittings, some 700 lights being introduced, are being installed by the Fyfe-Main Electric Lighting and Construction Company.

CHURCH OF ST. JOHN THE BAPTIST, BURFORD, OXON.

(See description on page 174.)

"ET VERBUM CARO FACTUM EST."

This drawing is an illustration of an aspect of the Incarnation; the idea being to express the union of the human life of Christ at all ages with the Godhead. The principal figure is the youthful Christus holding a book, with a sentence displayed from the first chapter of St. John's Gospel, "And the Word was made flesh and dwelt among us." The screen behind the figure may be taken to represent the veil of material existence into which He entered, and the adoring intelligences above are therefore placed on the further side of it. The composition was designed as a decoration for a space in a church, but it has since passed into the hands of a private purchaser.

HOUSE NEAR EAST GRINSTEAD.

This house is now in course of erection for Mr. Richard Gunter on a charming site near the village of Turner's Hill and about a mile from the railway station at Grange-road. The walls are of stone, quarried upon Mr. Gunter's estate. It is a fine-grained sandstone, of a warm cream colour, and singularly free from any defects. When first quarried the stone is soft and easily worked, but rapidly hardens when exposed to the air. Blocks of several tons weight are being got out of the quarry, which appears not to have been worked for a century or so, although one or two good houses in the vicinity are known to have been built of it some 200 years ago. The upper walls and roof are covered with Broseley tiles. The half-timber-work is executed in oak. Mr. George Box, of Ardingley, is the builder, and Mr. Edward W. Mountford, F.R.I.B.A., of Buckingham-street, Charing-cross, is the architect. The cost is about £1,000, exclusive of the stone, which is delivered free upon the site by Mr. Gunter.

QUEEN'S PARK CONGREGATIONAL CHURCH AND SCHOOLS.

This church and schools are situated at the corner of Third Avenue and Harrow-road on the Queen's Park Estate of the Artisans', Labourers', and General Dwellings Company. The schools were built in 1884, and consist of a complete suite of class-rooms, vestries, kitchen, &c., on the ground floor, and a school-room, 67ft. by 34ft., on first floor, holding 500 people, and having a gallery at south end. The church, which has just been completed, accommodates about 1,500 people, and is 96ft. long by 54ft. wide, having a large nave, 31ft. wide, and aisles each side, with an arcade of six arches. A spacious gallery is carried all round the church, and is approached by means of three staircases, one communicating directly with the school-room above referred to. Under the north end of gallery are provided week-night, ministers' and deacons' vestries, and other accommodation. The tower between the schools and church, which contains a staircase, is at present only 60ft high, but will eventually be carried up as shown to a height of 125ft. The walls internally are faced with red brick, with stone and moulded brick dressings. The roofs are open, with wrought timbers and panelled ceilings, that to the church being 50ft. high and that to school-room 34ft. The gallery-front, rostrum, and doors are executed in oak. The buildings are faced outside with red brick, with Box Hill stone and moulded brick dressings. A feature has been made of the two outside open porches to church: these are executed in gauged brickwork with brick vaulting and stone columns and dressings. The cost of the church just completed was £6,000. The architect is Mr. Rowland Plumbe, F.R.I.B.A., 13, Fitzroy-square, W. The builders were Messrs. Treasure and Son, London and Shrewsbury. Mr. L. G. Trund was clerk of works.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Wiltshire Archæological Society.—The concluding excursions in connection with the annual meeting of this society were held on Friday. A party of about one hundred and fifty including General Pitt-Rivers, the president proceeded by brakes from Devizes to Potterne. The church was built in the early part of the 13th century, and the font and the north door are of that period. The party then proceeded to the Old Porch House, the property of Mr. W. B. Richmond, R.A. Various ideas were hazarded as to the date of the building, but it was generally agreed that it was Elizabethan. The floors were originally of mud and rushes, but Mr. Richmond has them laid with splendid tesselated pavements. After inspecting the museum of curiosities, they proceeded to Market Lavington, where Mr. C. E. Ponting read a paper, saying that formerly a Norman church stood here, and was rebuilt in the 14th century. A feature of the church was that the floor originally sloped with the natural level of the earth. The tower is 15th century, but the rood of the chancel is the original 14th-century rood. The party then proceeded to Erchfort, where the 13th-century church there was described by Mr. Ponting.

CHIPS.

A complimentary supper was given last week at Truro to the contractors, Messrs. Clemens and Tippett, and their staff, who have erected new business premises in River-street for the present mayor of that city. The architect, Mr. Silvan Trevail, was present.

Lord Hartington attended on Saturday the laying of the corner-stone of a new church at Crawshaw-booth, Rossendale.

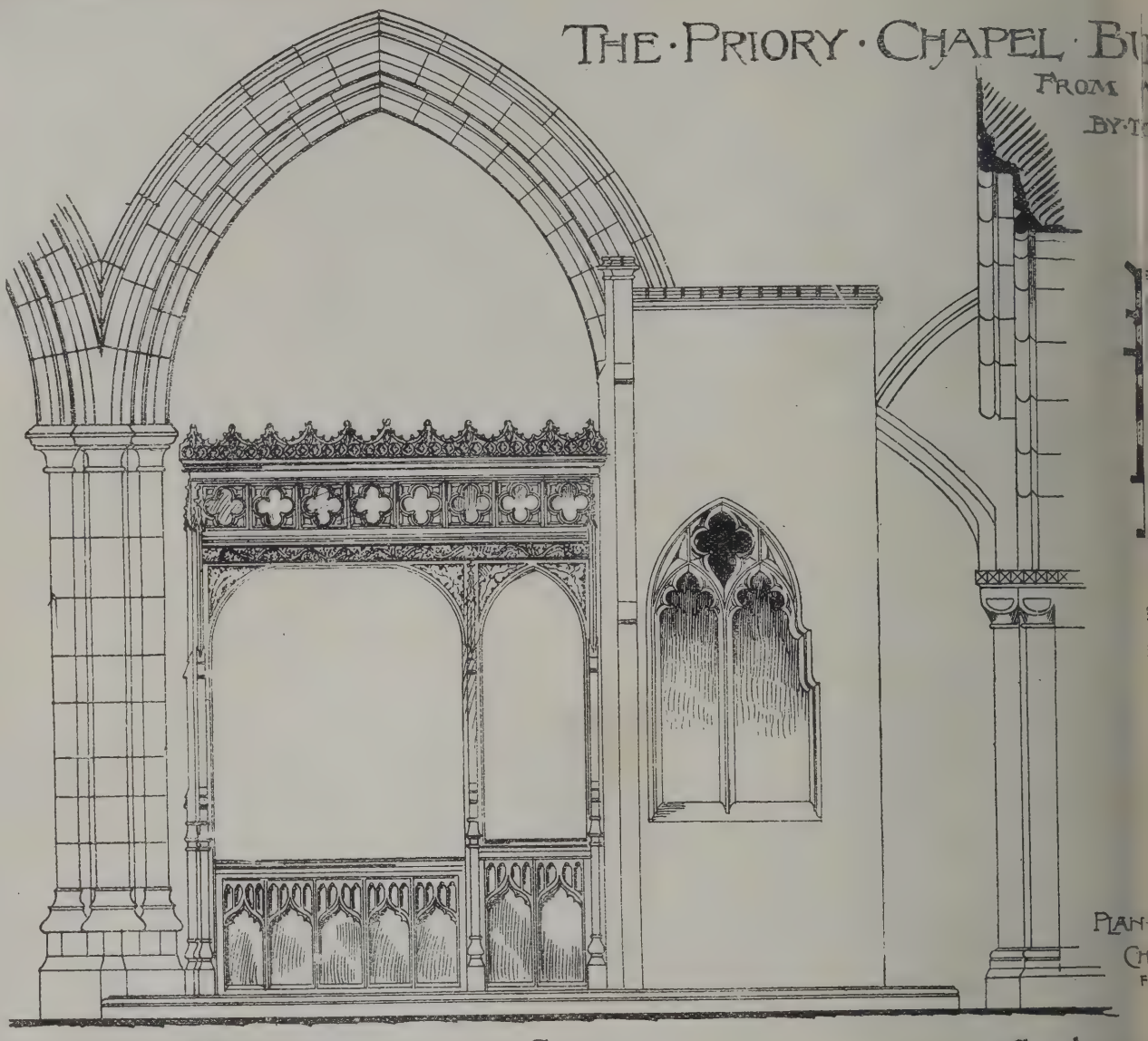
Mr. Mitton Ward, of Accrington, has been appointed town foreman of Weston-super-Mare. There were nearly 500 applicants for the appointment.

The Lords' Committee, in finally considering the London County Council Bill, increased the limit of the height of buildings from 70ft. to 90ft. The committee also decided that in the case of the destruction by fire of Queen Anne's Mansions, or similar buildings, compensation should be paid in case the County Council ordered that the buildings erected in their place should be of a less height than they were originally.

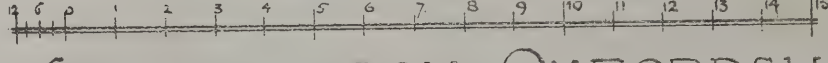
The new water supply for Newmilns, N.B., was inaugurated on Saturday. It is derived from springs at Allanton, about five miles from the town, and the engineer was Mr. Ex-Bailie Reid, of Kilmarnock.

At a general assembly of the Royal Society of British Artists, the following gentlemen have been elected members—viz., Messrs. A. Glendinning, jun., A. Hartley, F. W. Jackson, R. B. Nisbet, and Julius Olsson.

Queen-street Congregational Chapel, Wolverhampton, was reopened on Sunday, after being closed for repairs, the cost of which has been £1,500. The decorating has been carried out by Messrs. Lewis and Swindley, and the alterations and repairs by Messrs. Bradney and Co. The works have been carried out under the personal superintendence of the architect, Mr. Thomas H. Fleming, of Wolverhampton.

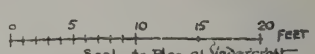


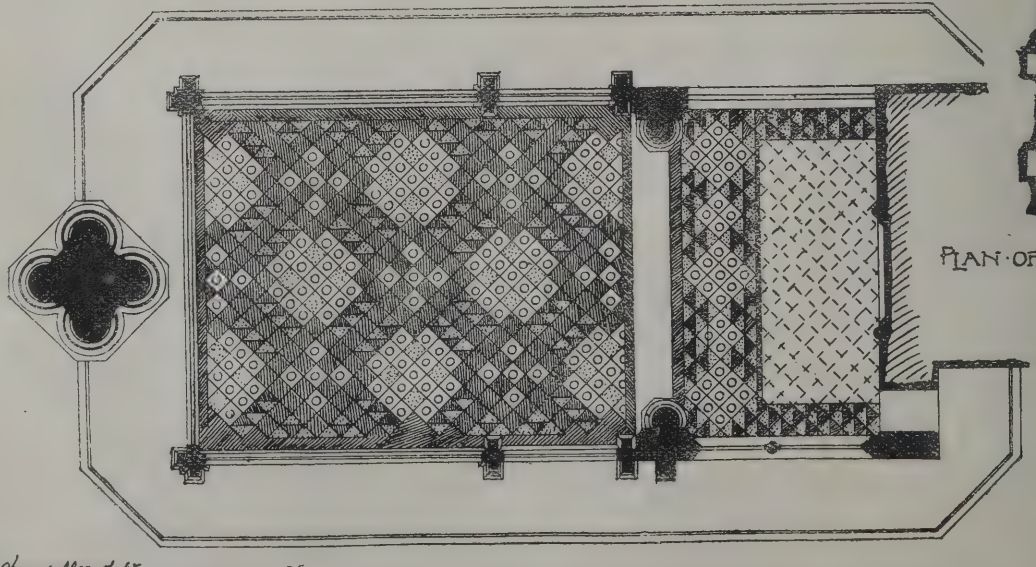
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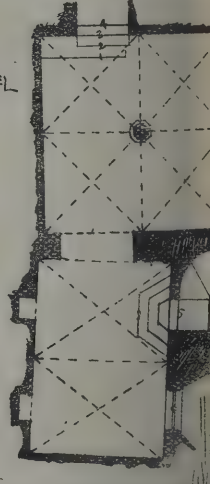


SKETCHES · FROM · OXFORDSHIRE ·

PLAN · OF · CHAPEL ·







PLAN · OF · UNDERCROFT

UNDERCRO

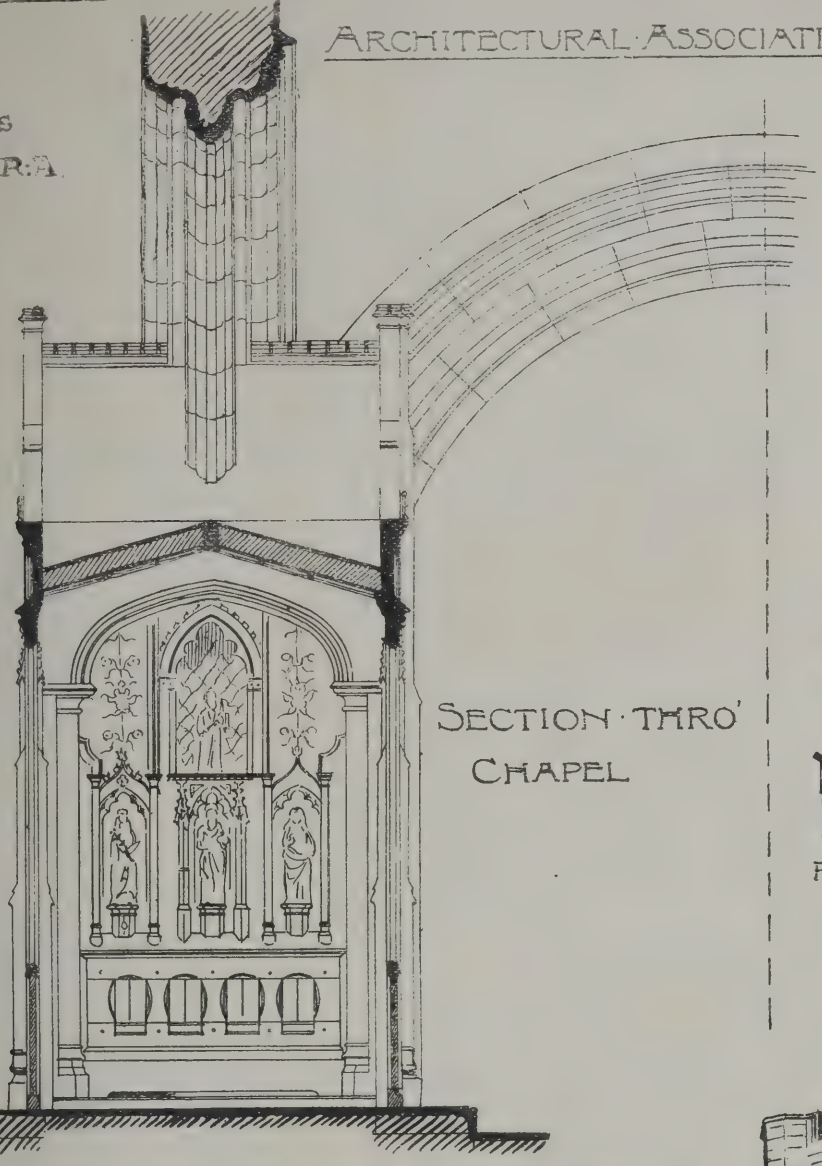
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ARCHITECTURAL ASSOCIATION EXCURSION
1890

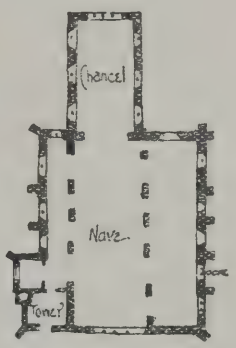
DRAWINGS
E. STREET, R.A.



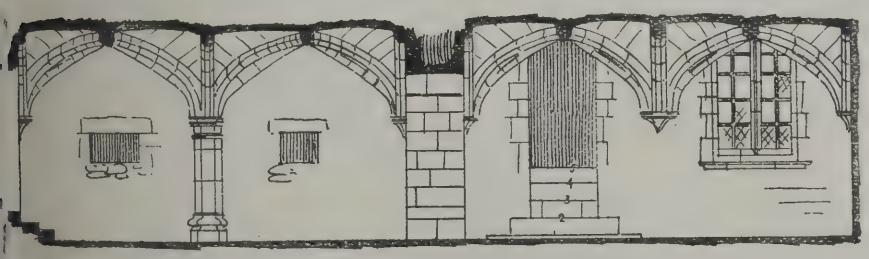
TER & PAUL'S
CHESTER
W.A. PITE



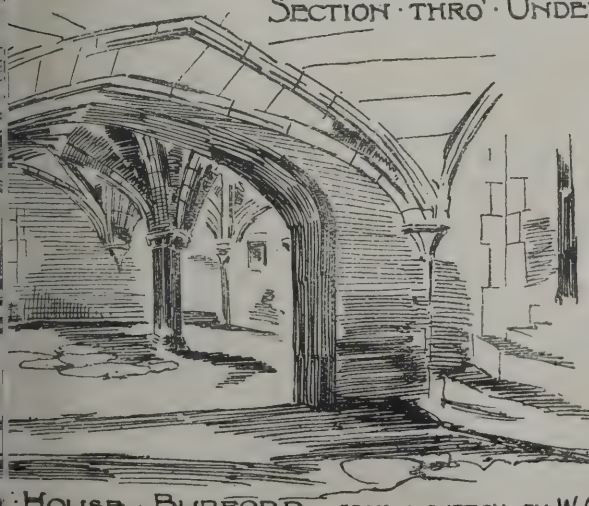
SECTION THRO'
CHAPEL



PLAN OF EYNSHAM CH.
OXON
FROM A SKETCH
BY W.A. PITE



SECTION THRO' UNDERCROFT



HOUSE BURFORD FROM A SKETCH BY W.A. PITE



EYNSHAM CHURCH FROM N.W.
FROM A SKETCH BY W.A. PITE

WAYSIDE NOTES.

Y remarks on the Bermondsey Free Library Competition were made in entire ignorance y incident of the kind to which you last alluded. I had taken it for granted that remiums had been awarded on the recom- ation of Mr. Elkington. If, as I have no t is the case, you have been accurately med as to the proceedings of the committee, ers must be viewed in a very different aspect. gaging an assessor, competition committees upposed to be providing against their own mpetency to judge the merits of architects' ns. Otherwise, why is he engaged? Is it use people are beginning to learn that, in r to get competition designs from architects y standing, they must appoint an assessor, her or no they intend to abide by his ion? If such is the case, we shall have er evil attendant upon a system already rkable chiefly for its shortcomings. We be compelled to take some step to nt the assessor becoming a mere bait to out to the crowd of competitors always to snap at anything that looks outwardly ing. I have little doubt but that this has often done in the past, and that behind the of the innocent assessor, with his big name reputation giving an air of verisimilitude to cene, are hidden the barbs that aim destruc- at the mass of competitors. Seeing the job have had to get the assessor generally inted in competitions, we should be jealous is position, and endeavour to prevent him ming, unwittingly, the source of new evils. not say that anything of the kind to which ve herein alluded has taken place in con- on with the competition referred to. It d be unfair to comment on the matter until thing more definite is known, so I would this note read as general, and as touching ompetition system as a whole.

nent the which, and on the subject of sors, I have lately thought that something it be said as to the qualifications of those ted to judge the merits of competitors' rings. Could not a little room for improve- t be found in the selecting of men specially l to fulfil the exigencies of each peculiar ? We are all right as regards town-halls buildings of a general and ordinary descrip- but we are often just as much *all wrong* re buildings requiring special knowledge for design are concerned. It produces any- g but an enviable feeling to learn that the sor appointed to adjudicate upon a competi- in which one is engaged is so lacking in nical knowledge of the subject in hand, and lly wanting in experience of the design of lings for the special purpose, as to be in- ble of appreciating the results of specially cted efforts and study. This galling experi- must be familiar enough to many old com- ors, and if something could be done to edy the evil it would be a great boon. ssors should be selected with more judgment forethought. In the majority of cases it not matter whether the assessor has or has special knowledge; so long as he is a good round architect, affairs will go smoothly igh. It is the exceptional instances that uld receive attention. An architect competing a free public library does not want an assessor has done nothing all his life but build and ore churches; and a designer of a matter-of- economically-planned public market does care to have his scheme judged by a gentle- n of the bottle-glass school. The competing urch architect" will not feel lovingly ards a committee who appoint an engineer- itect to place the premiums; nor will the itect-engineer be pleased to learn that a tleman who devotes most of his time to the oration of interiors is to examine and report o the relative merits of constructive schemes mitted by himself and others. The fact that malies like these do occur causes much stice and dissatisfaction all round. The orts of assessors disclose their ignorance to e who have the information that enables n to detect it, and where it happens that a cialist in one line is put to judge specialism in ther line, it is curious to see how everything iewed through coloured glasses, so to speak. igns for every class of building are judged ording to their merits in certain details may be in the specialist's way of iness, and broad facts are lost sight of in grubbing about for comparatively insignificant details. I noticed a remarkable instance of this a short time ago, where nothing was said as to the main provisions of an extensive design, every apartment in which required separate special study; but the scheme was generally commended because of its sanitary arrangements and the fact that the w.c.'s were against outside walls!

In enforcing the height of London buildings in accordance with the new regulations to be included in the powers sought by the County Council in their Bill now before Parliament, the Council will have to make certain definitions as to roofs, or we may suddenly find Metropolitan roofs grow prodigiously. I believe that two stories will be allowed in the roof. If not otherwise restrained, some people may find it convenient to put two uncommonly lofty stories in their roofs, and if they follow Mansardian principles, there won't be a vast amount of difference between the building proper and its roof. A roofed building is certainly less objectionable than the box-like structures of the modern flat-builder; but a big roof in a crowded city blocks out the light and air, and should be liable to pruning, like sheer walls.

London architecture is as much the outcome of authoritative restrictions as of any influences of fashion and taste; and I foresee a still further modification, or *development*, if so it may be called, when the new regulations as to height come into force. Those compelled, as many are, by necessity, or speculative ambition, to build to their utmost limits, will soon find that the problem will be how to provide the best possible accommodation without danger of contravening the law. Curb roofs will probably come into fashion, and a roof uncommonly like a bit of the solid substructure may be expected to arise, unless suppressed, at an early period of its career, by the action of the municipal authorities, to wit, the County Council. Unless some further and explicit definitions be made at head-quarters, we may some day see your "Legal Intelligence" columns sub-headed, "What is a roof?" and parties called to swear that a roof is not a roof, and that what is not a roof is a roof, whilst all the time we shall know that a roof is a roof all the world over. But perhaps, after all, so much ingenuity has been displayed in dealing with the roofs of London buildings, so as to get accommodation and yet not interfere with ancient lights, that there is little hope for novelty in treatment. Here, again, however, it will depend upon the definition of a roof for the purposes of the new Act, which may almost be regarded as passed. It may be that the ingenious draughtsman may yet get an extra cubic inch or two of accommodation in his roof when he sets to work on his sections under an Act of Parliament regulating the height of London buildings.

Before the third reading of the Public Health Acts Amendment Bill, Mr. J. Kelly moved an amendment to Clause 42, with the object of rendering it compulsory that a new road should be sewered and metalled before being taken over by the local authority. Mr. Kelly urged that the proposed alteration in the law which the Bill contained was a relaxation in favour of jerry-builders, who, acting in concert with petty local authorities, would be able to evade the provisions which were now insisted on. On a division of the House, the amendment was lost by a majority of 75. The result, perhaps, is all that could have been expected. One sympathises with the mover of the amendment in his endeavour to checkmate the jerry builder at every point; but in the present case, I do not see how the leaving of the sewerage and metalling of roads to the local authority would forward Mr. Buggins's interest. As a rule, such work is best done by the local boards, and it is rather hard on the owners of building estates to expect them to lay out a lot of money on a system of drainage, the outlet for which, perhaps, exists only on the town surveyor's plans which may or may not be carried out some years hence. This has often happened. The provisions of the Act, therefore, seem just, and the clauses concerning the taking over of roads by local authorities would seem good in that they may, in cases, facilitate matters in connection with the development of building estates. Moreover, the sewering and metalling is not infrequently a benefit to the general public of the district, and as such should be done at the general expense—that is to say, by the local board. As to the work itself, it should, as a rule, be more economically carried out under the supervision of local boards.

I must say, however, one of the finest pieces of ordinary estate road-making and sewering I have seen was carried out by the owners of the land. Those architects and surveyors, too, who have much to do with estate work will not think that the local authorities should make up and sewer roads. Long before they obtain any remunerative work on a new estate there is much to be done in road and sewer-making, if the owner himself do the work, as, indeed, he must do in most cases, roads and sewers not being found ready-made, in convenient positions, on building estates. There are thus contracts with road-makers to keep them busy till the surveying of the works of the speculative builder comes along; and whilst such means of livelihood remain, and building estates and leaseholding continue in vogue, it will not be the general wish of the architectural profession that town surveyors and surveyors to local boards should step into its shoes.

GOTH.

CHIPS.

A lecture hall and class-rooms are about to be added to St. Kilda's Presbyterian Church at Jarrow, from plans by Mr. J. W. Hanson, of that town.

In order to protect Cromer from the incursions of the sea, it has been decided by the Commissioners to extend the concrete breakwater for a distance of 94 yards, in accordance with plans and a report by their engineer, Mr. J. E. Teasdel, of Great Yarmouth.

A boys' school is being built for the Hastings School Board in Priory-road, West Hill. Mr. H. F. Humphreys, of Trinity-street, Hastings, is the architect, and the tender of Mr. W. Small, of the same town, has been accepted for the execution of the work at £2,628.

The work of adapting the ground-floor premises recently acquired by the Royal Institute of British Architects for the purposes of a council room and a secretary's office was begun by Messrs. Cubitt and Co. a fortnight since, under the professional superintendence of Mr. Aston Webb, hon. secretary; and it is hoped that the rooms may be ready for occupation in October. New window-openings are to be made in the north wall of the meeting room, with the object of obtaining more light and air.

Mr. George Manwaring, C.E., died at his residence at Swathling, near Southampton, on Friday, in his 81st year. Mr. Manwaring held the appointment of water engineer to the Southampton Water Commissioners from 1847 to 1851, and to the Southampton Corporation from 1851 to 1884, when he retired upon an allowance of £125 a year, with the rank of consulting engineer to the Corporation.

A fire occurred at Allfarthing-lane, Wandsworth, on Saturday night, and resulted in the complete destruction of the workshops of Mr. T. H. Brunsden, builder.

The death is announced of the Vicomte Calley Saint Paul de Sinçay, who was born at Paris in 1815. He was at the head of the zinc works of La Vieille Montagne for 45 years, and saw its *personnel* increase from 900 to 7,000.

At Belfast police-court last week James Rea, builder, of Gracehill-street, was fined in the full penalty of £5, with a continuing penalty of 40s. a day, for omitting to construct proper foundations to houses in Oldmark-road and Gracehill-street. The evidence showed that defendant, after being warned, proceeded with the erection of the buildings, using road scrapings in place of mortar, timber of insufficient scantling, as well as improper foundations.

A new Wesleyan chapel is being built in Westbury-park, Durdham-down, Bristol, from plans by Mr. H. D. Bryan, of that city. Mr. Lewis is the contractor, and the outlay will be about £3,000.

At the York Consistory Court, on Friday, a faculty was granted for the restoration of Aughton parish church. The whole of the pews and internal fittings, including the gallery, will be removed, and low seats substituted for the pews, and the building will be re-roofed.

The Gladstone Club at Northwich was formally opened last week. It is Elizabethan in character, and is of brick and half-timber work. The chief room on the first floor is 44ft. 6in. by 27ft. Mr. M. K. Ellerton, of Northwich, was the architect, and Mr. William Molyneux the builder.

PRACTICAL ARCHITECTURE WITH DETAILED ESTIMATES.—LXVIII.

By Henry Lovegrove, F.S.I., Surveyor.

ESTIMATE FOR A VILLAGE ELEMENTARY SCHOOL.—BILL.

TILER.

Sqs	ft.	in.			£ s. d.
57	35	0	Sup.	Broseley strawberry - coloured nibbed tiling laid to a 4in. gauge, each tile secured with two zinc nails	
	990	0	Run.	Cutting and waste to tiling at hips, &c.	
	62	0	Run.	Cement fillet and pointing to verge	
	171	0	,,	Double course of tiles in cement to eaves	
	153	0	,,	Red tile ridge with plain roll, set and pointed in cement, to be purchased of Messrs Cooper and Co., Maidenhead, Berks	
				No. 2. Terminations of ridge with two hips	
				No. 2. Intersections of ridge with hip and valley	
				No. 3 Do. do. with three valleys	
	59	0	Run.	Purpose-made hip tiles set and pointed in cement	
	111	0	,,	Do. valley tiles do. do Leave roofs clean and perfect	

Carried to summary .....

CARPENTER.

	9	0	Sup.	Centring to flat brick arch	
	35	0	,,	Do. to trimmer arch	
	9	0	Run.	Do. to flat arch in stone 14in. soffit with circular angles	
	25	0	,,	Segmental centring to brick arch, 4½in. soffit	
	9	0	,,	Do. do. to stone	
				Do. 9in. do	
	103	0	,,	Turning piece to 4½in. soffit	
	104	0	Cube.	Fir in wall-plates and lintels	
	1226	0	,,	Do. framed in floors, roofs, &c.	
	174	0	,,	Do. do. in principals	
	1756	0	Sup.	Labour planing on fir	
57	35	0	,,	Labour, deal battening for tiling	
	50	0	,,	1in. gutter-board, and 3in. by 2in. framed bearers	
	50	0	,,	1in. close-jointed boarding to roof for lead, circular	
	19	0	,,	1in. do. and firrings	
	91	0	,,	1in. do. vertical	
57	35	0	,,	1½in. boarding on roof in narrow widths	
57	35	0	,,	Inodorous roofing felt, laid with proper laps, for which allow	
	41	0	Run.	Labour splay cutting and waste to 1in.	
	83	0	,,	Labour circular do. to 2 in. fir	
	21	0	,,	Labour circular do. to 3in. fir	
	17	0	,,	Labour do. ornament do. to fir 6in. thick	
	33	0	,,	Labour moulding, 6in. girt, stopped	
				No. 16. Moulded stops to do	
	21	0	,,	Feather-edged springer	
	390			3in. by 1½in. tilting fillet	
	7		,,	2in. rounded roll	
				No. 4. Splayed ends to do.	
	57		,,	2½in. do. do.	
	37		,,	Do. circular	
				No 8. Circular cutting to ends	
				No. 16. Mitres	
				,, 2. Splayed ends	
	17	0	Run.	1in. deal narrow chimney gutter and bearers	
	256	0	,,	3in. by 2in. herringbone strutting to 9in. joists	
	202	0	,,	Do. to 11in. do.	
	12	0	,,	6in. by 2½in. fir wrought and framed uprights	
	89	0	,,	4in. by 3in. fir plate, scribed and bolted to iron girder	
				No. 4. Notchings in 1in. boarding, 8in. girth	
				,, 4. Do. do. 18in. girth	
				No. 150. Ends of 4½in. by 2in. fir rafter, cut and wrought	
				,, 2. Moulded ends to 14in. by 9in. fir bearer	
				,, 1. Turning to form ball moulded finial, out of 12in. by 12in. by 3ft. 10in. high	
				,, 1. Deal rounded roll in gutter	
				,, 4. 2½in. deal, rebated drips, do	
				No. 10. Wrought moulded and carved fir brackets out of 9in. by 6in. by 3ft. long	
				,, 1. Turned circular chamfered collar out of 12in. by 12in. by 6in., with 6in. diameter perforation, and dished at bottom, forming plinth at base of finial	
				No. 24. Dozen deal slips 9in. by 4½in. by ¾in., and building in	

Carried to summary .....

JOINER AND IRONMONGER.

N.B.—For general description of materials see Carpenter's Bill. All mouldings, &c., to be to details.

FRAMES, &c.

Sqs.	ft.	in.			£ s. d.
	57	0	Cube.	Fir wrought all round and framed (out of balk timber)	
	29	0	,,	Do. do. do. and twice beaded do.	
	10	0	,,	Fir wrought, framed, rebated, and beaded frame	
	110	0	,,	Do. do. and moulded do.	

FLOORS.

N.B.—If the floors open the 1-16th of an inch they are to be taken up and relaid.

All floor boards to be stacked on the site one month after signing the contract.

Sqs.	ft.	in.			£ s. d.
29	90	0	Sup.	1¼ yellow batten floor, ploughed and tongued with hoop-iron and splayed headings	
	3	0	,,	Do. and bearings	
	39	0	Run.	Raking and cutting and waste on do.	
				No. 4. Cutting and fitting do. to iron stanchions 2ft. 6in. girth	
20	90	0	Sup.	Flooring with 3in. deal blocks laid in Stockholm tar	
	32	0	Run.	Raking, cutting, and waste on do.	
				No. 2. Cutting and fitting do. to iron stanchions 2ft. 6in. girth	

WINDOWS.

	646	0	Sup.	2in. deal moulded sashes in small squares, with stout bars fixed	
	757	0	,,	2in. do. do. casements do. do. hung on butts	

DOORS AND FRAMINGS.

	100	0	Sup.	1in. proper ledged and beaded doors	
	210	0	,,	2in. three-panel doors, the lower panels moulded both sides, the upper open and prepared for glass, including beads	
	52	0	,,	2½in. door, the lower part in four panels moulded both sides, the upper part sashed with stout bars in small squares, with elliptical corners	
	973	0	,,	2in. moulded both sides, framing four panels high, hung to slide. Window and door finishings, &c., including backings	
	5	0	,,	1¼in. rebated lining tongued at angle	
	3	0	,,	1¼in. rounded window board	
	26	0	,,	1¼in. framed and double rebated jamb linings	
	134	0	,,	Do. cross-tongued	

THICKNESSES AND BACKINGS.

	86	0	Sup.	1in. wrought one side fascia	
	18	0	,,	Do. do. in short lengths between rafters	
	86	0	,,	Do. and cross-tongued louvres	
	17	0	,,	Do. do. and framed	
	141	0	,,	Do. and twice beaded, lining plugged to wall	
	452	0	,,	Do. and beaded casing to iron stanchion	
	59	0	Sup.	1in. clean deal w.c. seat and riser, and stout dovetailed bearers	
	20	0	,,	1½in. do. mortice-clamped, flap hung	
	42	0	,,	Moulded cornice with dentil course to design glued and blocked	
				No. 4. Mitres	
	42	0	Run.	Labour scribing 2in. to brickwork	
	74	0	,,	Labour notching 1in. louvre boards	
	18	0	,,	Labour rounded edge	
	14	0	,,	,, do. nosing on 1¼in.	
	125	0	,,	,, to groove	
	50	0	,,	,, do. across grain for 1in. louvres	
	27	0	,,	Labour splayed edge on 1in	
	9	0	,,	Mitred beads	
	36	0	,,	Glued and mitred margin to hearth	
	40	0	,,	¾in. square skirting, 4½in. high, plugged to wall	
				No. 12. Tongued angles to do	
				,, Fair ends with rounded corners	
	92	0	,,	¾in. narrow framed and splayed grounds	
	234	0	,,	Do. do. and beaded do.	
	378	0	Run.	4½in. by ¾in. framed and moulded grounds	
	260	0	,,	4½in. by ¾in. do. and moulded both edges do.	
				No. 92. Ends fitted	
	14	0	,,	10in. by ¾in. grounds as last	
				No. 8. Ends do.	
	171	0	,,	7in. by ¾in. wrought one side eaves board	
	123	0	,,	2in. by 1in. do., stop planted on	
	416	0	,,	3in. by 1in. rounded window lining tongued at angles and to frame	
	705	0	,,	2in. by 1¼in. chamfered fillet as skirting, including mitres	
	6	0	,,	3in. by 1¼in. rounded window board tongued to oak sill	
				No. 4. Mitred and returned ends.	
	206	0	,,	4½in. by 1¼in. window board as last	
				No. 70. Ends as last	
				No. 30. Notchings	
	41	0	,,	3in. by 2in. wrought fir bearers	
	7	0	,,	Moulding 3in. by 1¼in. planted on	
				No. 4. Mitred and returned moulded ends	
	213	0	,,	Do. 2¼in. by 2in. do.	
				No. 72. Ends as last	
	17	0	,,	3½in. by 2in. moulding	
				No. 4. Mitres	
	1312	0	,,	3in. Moulded architrave and mitres	
				No. 102. Ends fitted	
	179	0	,,	Moulded 4in. girth	
				No. 6. Ends fitted	
	148	0	,,	Moulded out of 4in. by 2in.	
				No. 68. Ends scribed and fitted fitted to stone	
	6	0	,,	Do. out of 3in. by 2½in.	
				No. 4. Mitres	

Sqs.	ft.	in.			£ s. d.
	20	0	,,	Moulding out of 4in. by 3in.	
				No. 4. Mitres	
	31	0	,,	Do. 4½in. by 3in., spiked to plate.	
				No. 4. Scribed ends	
	263	0	,,	Fir wrought framed and moulded out of 9in. by 4½in. moulded 14in. girth	
	19	0	,,	Do. plugged to wall	
				No. 52. Mitred and return moulded ends	
	24	0	,,	Moulding out of 8in. by 7in. fir	
				No. 4. Mitres	
	97	0	,,	Do. do. 9in. by 6in. do. as cornice	
				No. 24. Scribed and fitted ends.	
	19	0	,,	3in. carved and swelled frieze, 1ft. 4in. wide, tongued both edges	
				No. 4. Mitres	
				No. 2. Notchings in 1½in. window board	
				,, 2. Mitred and returned rounded ends to do.	
				,, 18. Perforations through 1in. ledged doors for ventilation	
				,, 2. Do. 13in. by 9in. do.	
				,, 6. Attend plumber to w.c.	
				,, 1. Attend plumber to mahogany do	
				,, 1. Attend plumber to lavatory 1 basin	
				,, 1. Attend plumber to lavatory, 4 basins	
				,, 6. Seat holts cut and dished	
				,, 6. Extra to seat and riser screwed to remove easily with brass cupped screws	

HONDURAS MAHOGANY AND FRENCH POLISHING.

Ft.	in.			£ s. d.
12	0	Sup.	1in. cross-tongued seat and riser on and including strong fir dovetailed bearers	
4	0	,,	1½in. mortise-clamped flap, hung.	
4	0	Run.	Labour rounded edge	
2	0	,,	Labour rounded nosing to 1½in.	
8	0	,,	¾in. square skirting, and grounds plugged to walls or fixed to partitions	
			No. 2. Tongued angles	
			,, 2. Fair ends with rounded corners	
			,, 1. Hole cut and dished in seat	
			,, 1. Extra to seat and riser to remove easily, screwed with brass cupped screws	

OAK.

	283	0	,,	5in. by 2¾in. sunk weathered grooved and throated sill	
	157	0	,,	Labour to groove	

STAIRS IN HARD YELLOW DEAL.

	4	0	Sup.	1in. tongued riser	
	135	0	,,	1¼in. treads with rounded nosings, and 1in. risers, tongued together, glued, blocked, and bracketed on, and including strong fir carriages	
	11	0	,,	1½in. cross-tongued landing on strong bearers	
	159	0	Run.	1¼in. balusters, square framed, one end to oak and the other to deal	
	8	0	,,	1¼in tongued and rounded nosing	
	24	0	,,	1¼in. beaded wall string	
				No. 2. Fair beaded ends	
				No. 3. Extra to ramps	
				No. 2. Cross-tongued heading joints	
	8	0	,,	1¼in. skirting to match wall-string plugged to walls	
				No. 1. Tongued and mitred angle.	
	24	0	,,	1¼in. framed and beaded outer string	
	24	0	,,	2in. by 2in. rebated and moulded capping	
				No. 4. Ends housed	
	20	0	,,	4in. by 4in. fir wrought and newel	
				No. 2. Ends stubbed to floor	
				No. 2. Turned pendants 12in. long	
				No. 6. Notchings	
				No. 4. Ends of risers housed to strings.	
				No. 48. Ends of treads and risers do.	
	32	0	Run.	4in. by 3½in. oak framed and moulded handrail, including joints, screws, and French polishing	
				No. 15. Extra to forming chamfered panels on newels 2½in. by 2ft. 1in. high	
				No. 4. Ornamental turned terminals 6in. by 6in. stubbed or framed to newel	

IRONMONGERY—INCLUDING SCREWS AND FIXING.

				No. 13. Pairs 4in. wrought iron butts	
				No. 130. Pairs 3in. brass do.	
				No. 1. Pairs 3in. do. (to mahogany)	
				No. 6. Pairs 18in. strong cross garnets	
				No. 2. 9in. iron barrel bolts	
				No. 38. Brass flush handles	
				No. 6. Norfolk latches	
				No. 12. 6in. mortise locks with brass furniture on both sides	
				No. 67. Tonks' brass wedge casement fastener	
				No. 65. Do. do. do. stays	
				No. 61. Elsley's patent openers for casements, at an average height of 10ft. 6in. from floor.	

Ft. in.		£ s. d.
252 0	Run. Galvanised iron tongue and groove in oak and white lead, and bedding sill in do	
134 0	„ Smith's or other approved water bar and fixing	
	No. 16. Iron dowels and mortices in fir..	
	Carried to summary	

A SANITARY CRUSADE ROUND THE WORLD.

THERE has just been completed a journey round the world by Mr. Robert Boyle, making his third circuit of the globe, which had for its object an investigation into the sanitary condition and arrangements of the different countries visited, with a view to awakening an increased interest in sanitary science, and securing the adoption of improved sanitary measures and appliances. The first place visited was Malta, where the sanitary arrangements were found to be defective in so far as that there was a want of proper ventilation for the drains and soil-pipes, otherwise the towns, Valleta in particular, were clean and fairly sweet. In Egypt it was different, the drainage of Alexandria and Cairo being by no means perfect, and any of the native towns in Arabia, Nubia, or the Soudan, visited by Mr. Boyle, would compare favourably with these cities in the matter of cleanliness. When in Cairo, Mr. Boyle surveyed the palace of the Khedive, for the ventilation of which plans have been sent in. From Egypt Mr. Boyle went to India, which country he traversed from Bombay in the west to Calcutta in the east, Madras in the south to the Khyber Pass in the North, touching the frontiers of Afghanistan and Kashmir, across the Himalayas to the borders of Thibet, and up the Brhamaputra through the valley of Assam.

The drainage of Bombay, which Mr. Boyle surveyed, and for the ventilation of which plans and estimates have been submitted, is shortly to be re-arranged, the present system being incomplete and unsatisfactory. The Boyle system of ventilation has also been adopted for the military barracks and officers' quarters, Bombay. Mr. Boyle was favourably impressed with the perfect sanitary arrangements employed at the "Towers of Silence," where the Parsees, disciples of Zoroaster and fire-worshippers, place their dead to be devoured by vultures—a somewhat similar plan to what Mr. Boyle has seen employed by the aboriginals of Australia for the disposal of their dead. At Delhi, Agra, Lahore, Peshawar, and other towns visited, the dry-closet system is used and seems to answer fairly well; but the water is bad, and unsafe to drink. At Benares and Calcutta the drainage was most defective, and the smells evolved from this source in certain quarters of these towns overpowering. In the former town cholera is never absent, and the customs of burning the dead on the banks of the Ganges in the rude and imperfect form in which it is done, and of throwing bodies into the river by those too poor to pay for burning, and which in time rise to the surface and float about in a decomposed state until consumed by vultures, are most pernicious practices, highly dangerous to health, as it is here the pilgrims congregate to bathe in and drink of the sacred waters of the Ganges. It is a common thing to see rows of dead bodies, many of whom have succumbed to the most infectious diseases, lying exposed at the burning Ghats waiting their turn, in the meanwhile, like destroying angels, though defunct ones, spreading death around them. Efforts have recently been made by the local engineer to improve the drainage of Madras; but, owing to ignorant interference on the part of certain of the city authorities, with but small results, though the principle advocated is correct.

In Ceylon the sanitary arrangements were fairly satisfactory, though somewhat primitive; but at the Straits Settlements, Penang and Singapore would vie with Calcutta itself for noxious smells. Hong Kong, at one time known, owing to its frightfully insanitary condition, as the "White Man's Grave," is considerably improved in this respect, and is now comparatively rather a healthy place to live in. It has a splendid water supply stored in the hills, and which is brought into the town by a fine aqueduct.

At Canton Mr. Boyle surveyed and supplied plans for the ventilation of the famous French Cathedral, erected under the auspices of Louis Napoleon. He has also furnished plans for the ventilation of the summer palace of the Emperor of China at Pekin, which was partially destroyed during the war of 1860, but is now being restored. This palace, different from the one now occupied by the Emperor at Pekin, which is of pure Chinese design, is built after the French style of architecture, and resembles the palace at Versailles, it having been designed by French Jesuit missionaries.

The sanitary condition of Pekin, as, indeed, of all the Chinese towns visited, Mr. Boyle found to be of the most deplorable description, the streets being practically nothing but open sewers and loathsome cesspools, into which all manner of filth is thrown and allowed to lie and putrefy, and from which arise an indescribably sickening and suffocating stench, only to be compared to what Mr. Boyle has experienced in some of the native villages in Morocco. The water, drawn from the most impure sources, is positively poisonous, being, in many places, simply the drainage from the streets and fields, which are liberally manured with human excreta in a liquid state, necessarily containing a large percentage of disease-germs. The dead are also never buried, being merely encased in rude coffins and laid anywhere on the fields amongst the crops, and in the course of time covered with mounds of earth. This gives China the appearance of one vast graveyard, and, as a matter of fact, though the population is over three hundred and forty millions, there are infinitely more dead Chinamen above ground in China than living, of which one is but too forcibly reminded by the unsavoury odours emanating from them. Under such conditions it is not to be wondered at that cholera, typhoid, and small-pox are constantly prevalent, especially the latter, which the majority of the Chinese seem to suffer from, few or no precautions being taken for the prevention or cure of the disease, it being quite a common thing to see people going about suffering from it in its different stages. A very curious method of inoculation is occasionally employed, which is to take some of the virus from a person having the disease and blow it up the nostrils. Vaccination is also sometimes performed on the temples. There was rather a severe outbreak of cholera in Pekin when Mr. Boyle was there, chiefly caused by eating raw, unripe vegetables, which the Chinese have a bad habit of doing. With regard to cholera, Mr. Boyle draws attention to a somewhat ominous fact of special interest at the present time, that every great epidemic which has swept the world has invariably been preceded by an epidemic exactly similar to what has just been experienced and named the influenza.

Mr. Boyle has submitted to the Chinese Government—through Li Hung Chang, the great Viceroy and virtual Ruler of China, whom he had the honour of meeting at Tientsin—suggestions for the amelioration of this unhappy state of things, which he had previously, in a modified form, submitted to the late Marquis Tseng when Chinese Ambassador to this country, and who took a deep interest in sanitary and other advanced ideas.

Mr. Boyle's visit to Pekin was principally for the purpose of conferring with the Marquis Tseng *re* the adoption and carrying out of his plans; but on his arrival in China he learned of the death, from typhoid fever, of—next to Li Hung Chang himself—the ablest and most progressive man in China.

When Mr. Boyle was in North China, a memorable event took place during the progress of the Emperor to the new Tombs. He, the Emperor, on that occasion, travelling openly and showing himself freely to the people, who, for the first time, gazed upon the features of a Chinese emperor, the death penalty, accompanied by frightful tortures, being formerly meted out to any who, wittingly or otherwise, cast their glance upon the sacred person of the descendant of the Sun. The torture as a punishment is practised all over China, and Mr. Boyle has witnessed, at different places of execution, cruelties perpetrated on the wretched victims of so horrible and ghastly a nature, that the mere description of them would make the soul sick with horror. Such diabolical atrocities can scarcely be conceived, and the most refined tortures of the Spanish inquisition pale before them.

Infanticide is another inhuman custom still practised, and in the streets of Pekin itself, in the early morning, dogs and pigs, covered with the most disgusting sores, with which the streets of the capital are infested, may be seen contending with each other for the body of some newborn female child, first strangled, and thus disposed of by its unnatural parents.

The Great Wall of China being but thirty miles distant from Pekin, Mr. Boyle was able to satisfy himself as to its existence, and that it was not a myth as asserted in the *Times* and other quarters. The wall is 25ft. high, 25ft. wide at the base, and 15ft. at the top, though these dimensions vary at different parts of the wall, which is said to be over 3,000 miles in length, and consists of a granite foundation, and two walls of large flat bricks of almost the solidity and hardness of granite, the space between being filed with firmly-rammed mud. It is now in a state of hopeless ruin, and utterly useless as a means of defence even against the wild Tartar hordes it was built to keep out. The wall surrounding the Tartar city of Pekin is esteemed the strongest in the world, being 60ft. high and 50ft. thick, defended by massive buttresses every 300 yards. It is built in a similar way, and of the same material as the Great Wall. The strength of this wall is only approached in a modern structure by the new Mormon Temple at Salt Lake City, which Mr. Boyle surveyed professionally last year, the walls of which at the ground level are 25ft. thick, built throughout of solid-dressed granite blocks.

When in Shanghai, a place which has a most treacherous climate, owing to the sudden and extreme changes in the temperature, Mr. Boyle tested his system of ventilation as applied to the Shanghai Club, said to be the finest club in the East, and the following report from the architect, Mr. J. Cory, F.R.I.B.A., testifies to its success:—

"The application of your system of ventilation to the Shanghai Club has proved so successful, and given such satisfaction, that I purpose using it exclusively in my practice here. Your latest improved air-pump ventilator has successfully withstood the trying conditions of this climate where open pipes and other such arrangements have proved useless."

It will be observed that the open pipe, when employed as an exhaust ventilator, answers no better in the East than it does in this country, according to Sir Douglas Galton, President of the Sanitary Institute, who, in condemning its use, says: "In consequence of the numerous causes of disturbance enumerated above, this method of extraction, when applied to a house, could not be relied on to act on all occasions with certainty as an extraction shaft." Mechanical and other artificial methods of ventilation were also found to be as unsatisfactory, as is notoriously the case at the London Law Courts and other public buildings where this very unreliable and costly means of ventilation has been tried.

Mr. Boyle's system of ventilation for ships has been adopted by the Chinese Merchants' Steamship Co., Shangai, who own the largest fleet in the Chinese seas, and a number of steamers have already been fitted with the air-pump ventilators, which are now in successful use in the fleets and navies of nearly every country in the world. The Chinese and Japanese Governments have the system at present before them with a view to its general adoption in their war-ships, China now possessing one of the finest navies afloat.

In Japan Mr. Boyle was very cordially received by the chief Government officials and local authorities, who gave him every assistance in his investigations into sanitary matters in that interesting and progressive country, and were much pleased with the improved schemes of ventilation and sanitation submitted to them, the advantages of which they seemed fully to appreciate. Mr. Boyle was requested to make a survey of the new Imperial Houses of Parliament at Tokio, the capital, and prepare plans and estimates for the ventilation of these buildings, which has been done. He also surveyed the Imperial University of Japan, Tokio, and furnished plans for the ventilation of the different colleges.

Excreta in Japan is disposed of by using it in a liquid form, as in China, to manure the land, and is removed daily from each house in small wooden barrels. The water supply is, in consequence, polluted and unwholesome to drink, though not so bad as in China, as the dead are not laid to rot on the fields, but doubled up, carefully packed in a square box, and buried in the gayest and most festive manner, the cortége resembling more a marriage procession than a funeral. In many parts of Japan, when a person

is ill, the treatment employed has certainly the advantage of simplicity, it being to stick the fleshy parts of the unfortunate patient full of needles, and trust to the Japanese equivalent for Providence.

Mr. Boyle returned to England *viâ* America and Canada, important contracts being pending in San Francisco, and plans having been sent in for the ventilation of the Canadian Houses of Parliament, Ottawa. Mr. Boyle was pleased to find in America a more awakened interest in sanitary matters than existed last year, when he visited all the principal towns in the United States, Canada, and Mexico, having interviews with President Harrison and other leading American statesmen, who then assured him of the intentions of the Government to advocate improved sanitary measures. It is Mr. Boyle's intention to publish shortly in book-form his experiences in the East.

CONGRESS OF SCOTTISH COUNCILS ON PLUMBERS' EDUCATION AND REGISTRATION.

AT the congress of Scottish District Councils for the National Education and Registration of Plumbers, held in Edinburgh on Thursday and Friday last week, Dr. Alexander Crum-Brown presided, and there were present delegates from Edinburgh, Glasgow, Aberdeen, Dundee, Dumfries, and Inverness Councils. The question first discussed was whether legislative sanction was necessary to give complete effect to the Registration system. It was urged that plumbers (both masters and men) must be made to realize their responsibility in regard to the public health, and that the power and penalties of an Act of Parliament were necessary to insure that none but duly-qualified men were allowed to practise. At the outset, however, the rights of all qualified plumbers already in practice should be preserved. After considerable discussion it was unanimously agreed that Parliamentary powers were necessary to give practical effect to the Registration system.

The second question, "Can certificates be cancelled or suspended under the present voluntary system," was also answered in the affirmative.

A resolution was passed expressive of the opinion of the congress that a graduated scheme for education of plumbers was feasible and desirable; that workshop practice should form part of this scheme; that the scheme of the Worshipful Company of Plumbers should be considered by the District Councils; that all apprentices should be indentured; and that the masters should interest themselves in the education of their apprentices.

Some reference was made to the question of registered and unregistered work, but it seemed to be the general feeling that the power of registered plumbers would certainly increase with their numbers.

The Chairman, in bringing the congress to a close, said that it had been even more successful than he had hoped, and he had hoped a good deal. The remarkable frankness of the discussions, and the harmony that had prevailed, showed that the members had definite opinions of their own which they were quite ready to submit for the consideration of the congress. A truly remarkable unanimity had also been displayed, and this was not the result of anyone hiding his views either from fear or bashfulness, and it was the result of real unanimity of opinion. He was truly gratified that the congress had been held in Edinburgh, and hoped that Glasgow would have an even better one next year.

BUILDING AND ENGINEERING TRADE DIRECTORIES.*

THE sixth editions of each of these indispensable works of reference, fortunately, are contemporary with pleasanter anticipations than those which marked the introductory chapters of the last editions. In 1886 the long years of depression were hardly over; but the retrospect of the past four years is a more cheering one, and the prospect more satisfactory still. Of what importance it is to the country that the building and engineering trades should be fairly prosperous the compilers remind us when they bid us remember that London alone uses seven hundred millions of bricks yearly, that our annual wood imports nearly reach twenty millions sterling, and that 6,898 architects, 5,394 surveyors, and 30,699 builders are in business in the United Kingdom, employing, directly or indirectly, more than 750,000 skilled artisans and nearly 600,000 general labourers and mechanics.

The engineering trades employ still more men and capital, and it is manifest how absolutely necessary are such accurate and reliable guides to the whereabouts of the hundreds of thousands thus engaged as Messrs. Kelly and Co. publish. They grow in bulk every time a new edition appears, and the vast care and industry inseparable from such undertakings are probably hardly appreciated at anything like their full value by those who gratefully avail themselves of the result. They stand alone and unrivalled, and are likely to do so.

* Kelly's Directory of the Building Trades, 1890; and Kelly's Directory of the Engineers' Iron and Metal Trades, 1890. (London: Kelly and Co.)

NOTES ON BUILDING PRICES.—V.

By John Leaning.

FOREMAN.

IN pricing a bill of quantities or otherwise preparing an estimate, the cost of maintaining a foreman on the works is best kept separate. He will be on the work at the beginning and ending of the building operations, and at both periods there will be very few men to supervise, consequently the general prices are best calculated without foreman. It will be expedient to find out either by calculation or reference to the early part of the bill, or to the conditions attached to the specification, what stipulation there may be as to times of completion. Calculate somewhat more than the prescribed period at about 60s. per week, the average rate of payment. In the country the foreman would, as a rule, be paid lodging money beside. In pricing work the foreman's time in day accounts is generally treated as a charge which the general rate of profit should cover. An allusion to foreman generally appears in a well-prepared schedule for day accounts. A clause is inserted which deals with general foreman's time, sometimes as follows:—"The above prices and prices for day work generally to include use of scaffold, and all tackle, tools, tool sharpening, water, and general foreman's times; subordinate foremen to be charged as ordinary workmen. Time for fixing and removing scaffolding will be allowed." It is sometimes advisable to depart from this rule when a foreman has only two or three men to supervise, as in the case of the time for completion being protracted by items of extra work. A good foreman on a building benefits all the parties concerned. He should know the quantity of work every man should do, and the amount of work which all the men together should do in a given time, and can help the work forward to a very great extent by putting men in their right place.

FIRE INSURANCE.

An agreement exists between the leading insurance offices as to rates. The charges for buildings in course of erection are as follows.

	1 month.	3 months.	9 months.	12 months.
For each £100 assured	s. d. 1 0	s. d. 1 3	s. d. 2 0	s. d. 2 0

There are some offices which charge more; but this scale may reasonably be taken for the pricing of estimates. Where more is claimed, the proper course is the production of the receipt. Insurance is usually postponed until some combustible material is fixed: if it is left to the option of the contractor; but more generally there is a specific stipulation as to time in the conditions of contract.

When the time allotted by contract for the erection of a building is exceeded, it becomes a question who shall pay the further charge for insurance. If the delay is the fault of the contractor, he should pay; if not, the building owner is liable.

WATER.

A bill of quantities should include an item for supply of water, and in any case the estimates must allow for it. When no water company supplies the neighbourhood, water may sometimes be obtained near the surface by digging, and the cost of well curb, digging, and use of tubs for storage must be reckoned. When there is an existing well and pump, the cost of pumping and storage, or it may be necessary to bring it from a lake or river, in which case a butt on wheels is most convenient for the purpose, when one such source of supply is clean and the other dirty, the use of the former will probably be insisted upon. In some cases, when water is near the surface, Norton's tube-wells may be advantageously used. A local carter will probably have a water-cart suited for the purpose, or a street watering-cart may be available, or a liquid-manure cart; whichever it may be, its capacity must be ascertained, the number of loads a day, possible or required, and the price per load for cartage. A butt will convey 108gals., a liquid-manure cart generally 120gals., water-carts are made to contain 200, 250, or 300gals., water-vans 350, 400, or 450gals. The filling with a bucket on the end of a pole is a tedious but common method, and it is preferable to agree for water supply by the load, to hiring cart and man by the day. When there is a local water company, the cost of a building supply may be easily discovered by inquiry. Some of the country corporations supply their jurisdiction with water, and publish their water regulations with their by-laws. London and its suburbs is supplied by eight water companies, each of which publishes a set of regulations to be observed in its district. These special regulations are similar in character. They generally stipulate that pipes shall be a certain depth below the surface, that the fittings shall be approved by the turncocks before connecting with main; some of them define the size of pipes and describe the cocks. The regulations of the local water company should always be examined before making an estimate, and they should be preserved for future use. Each of the London companies is constituted by a special Act of Parliament, which incorporates the public Acts relating to water companies. The chief concern of the estimator is the schedule of special regulations published by the company (obtainable by any applicant), and the Board of Trade regulations made under the Metropolis Water Act, 1871, which affects all the Metropolitan companies. These are amalgamated by some of the companies with their general regulations; others publish them separately, or copies may be obtained from the Government printers (Eyre and Spottiswoode). Application for a building supply is made generally on a printed form, the different companies requiring different information. The company makes connection and opens ground and makes good, only so far as thus rendered necessary. The list of water companies with their offices is to be found in the "London Post-Office Directory." The usual charge for making connections and supplying ferule is 5s. (except Lambeth, which see). The cost of a building supply will be made up as follows:—

Water company's charges for connection
— feet of pipe, *use and waste* .....
Ball-cock ,, ,, ...
Soldered joint .....

All the companies require a stop-cock in the permanent supply pipe immediately outside the boundary of the property. The companies will not, as a rule, allow a pipe laid for building supply to be used for the permanent purposes, except by special application; but if a pipe of the necessary size be laid in at first, the applications would certainly be granted, and it may be used for the building supply. The charges by the metropolitan companies for a building supply are as follows. Some of them are based on annual values, some on the cost of the building, others on the work for which water is required, and this latter is the most reasonable. There is a map of the district supplied by each company in Firth's "Municipal London":—

Chelsea.—¼ per cent. upon estimated cost of building.

East London.—One shilling per rod on brickwork; one penny per cubic yard on concrete.

	s.	d.
Kent.—Not exceeding £100	10	0
Exceeding £100 and not exceeding £150	15	0
,, £150 ,, ,, £200	20	0
,, £200 ,, ,, £250	25	0
,, £300 ,, ,, £350	35	0
,, £350 ,, ,, £400	40	0
,, £400 ,, ,, £500	45	0
,, £500 ,, ,, £600	50	0
,, £600 ,, ,, £700	55	0
,, £700 ,, ,, £800	60	0
,, £800 ,, ,, £900	65	0
,, £900 ,, ,, £1,000	70	0
,, £1,000 ,, ,, £1,100	75	0
,, £1,100 ,, ,, £1,200	80	0

Above £1,200 by special agreement.

New River :—

	s.		s.
£100	10 each	£325	32 each
£125	13 ,,	£350	35 ,,
£150	15 ,,	£375	38 ,,
£175	18 ,,	£400	40 ,,
£200	20 ,,	£450	42 ,,
£225	23 ,,	£500	45 ,,
£250	25 ,,	£600 to £700	50 ,,
£275	28 ,,	£800 ,, £900	60 ,,
£300	30 ,,	£1,000 ,, £1,200	70 ,,

Above £1,200, 5 per cent. additional.

West Middlesex.—5s. per cent. on the estimated cost of building. When engines are used, an extra rate of £1 1s. per horse-power per annum will be charged.

Southwark and Vauxhall. — No published scale; rates based on value of building will be given on application.

Grand Junction. — Charges on estimated cost of building :—

	s.	d.	
£100 and under £500.....	8	0	per cent.
£500 ,, £1,000....	7	0	,,
£1,000 ,, £3,000....	6	0	,,
£3,000 ,, £10,000 ..	5	0	,,
£10,000 ,, £20,000 ..	4	0	,,
£20,000 ,, £30,000 ..	3	0	,,
£30,000 and above	2	6	,,

Should difference of calculation arise as to the estimated cost, then the charge to be fixed upon the estimated annual value at 1s. per £1 sterling of such value.

Lambeth.—No published scale; rates based on value of building will be furnished on application.

Charges for connection, including stop-cock, ferule, opening ground, and reinstating, constant supply district only—	s.
½in.	15
¾in., country district	21
1in., ,, ,, ...	30
1¼in., ,, ,, ...	35
1½in., ,, ,, ...	42

Other sizes by special agreement.

The above charges for opening, reinstating, and relaying are for ordinary trenches only; but if in opening a trench tar paving has to be broken and reinstated, an extra charge of 5s. will be made. If asphalte or wood paving, the extra charge will be 10s.

If the required quantity be very large, and the time for erection long, application should be made for supply by meter, and the charge would be at similar rates to the following. It would also be necessary to allow for the use and fixing of a water-meter, or the company would supply a meter at a rental.

Quarterly consumption.	Per 1,000 gals.
From 25,000 to 50,000 gallons	9d.
,, 50,000 ,, 100,000 ,, ...	8d.
,, 100,000 ,, 200,000 ,, ...	7d.
All above 200,000 ,, ...	6d.

If high-service, 25 per cent. additional on these rates.

The following are instances of amounts included in estimates for temporary plumber's work and storage of water :—

Cost of Building.	Amount.	
House at Kensington ..	£5,200	£1
House at Hornsey	£2,000	£4
House, Oxfordshire....	£3,900	£7
Alterations to London Printing Office	£2,700	£10

The quantity of water required for various kinds of work is as follows :—

A cubic yard of concrete dependent upon the quantity of sand in the ballast, the average quantity is about	25 gallons
A rod of brickwork in mortar, one of lime to three sand, about	220 ,,
Do. in cement, one of cement to two of sand	130 ,,
A superficial yard of render, float, and set	3 ,,

CLERK OF WORKS.

This item appears in specifications or bill of quantities somewhat like the following. Allow for an office for clerk of works, and for the requisite firing, lighting, and attendance. The cost of the foregoing will vary considerably; many contractors have movable structures which can be taken from their yard to the site of the building; in which case a percentage on its original cost may be reckoned. These are warmed by standing stoves. Others build a temporary structure with a fireplace, in which case a rough estimate of the cost may be made. Generally, two or three hours a day of a labourer will be expended on attendance. The cost of fuel will depend upon the season of the year.

A common charge in the winter is 6d. per day for fuel, and the rent of the office may be reckoned at about 2s. 6d. per week. The following are sums actually allowed in estimates, but are not valuable guides, as the circumstances vary :—

	Contract.	C.O.W. office.
For an alteration in the country	£9,000 ..	£10
For Schools in Surrey	£4,900 ..	£30
,, House at Chelsea	£3,400 ..	£10

Attendance.—A properly written specification usually contains a clause to the effect that each trade shall attend upon and make good after all other trades; but whether it does so or not, the contractor is bound to complete his work, and under one condition or another of most contracts his liability could be established. In pricing a bill of quantities it must be examined to discover the extent of detail adopted by the surveyor in his treatment of this item. There is a growing tendency with surveyors to enumerate everything in this way that can be clearly defined, and it may be admitted that the less left to speculation in a bill of quantities the better. The expense of attendance depends greatly upon the quality of the management; the estimation of its value must always be regulated by this consideration, and, consequently, speculative; only experience and careful observation will enable the estimator to value it. When a sum is provided for the whole of the gas-fitting, hot-water work, or electric lighting, and no mention is made of attendance, it may be assumed that the attendance is included in the amount. In the case of a separate estimate by a specialist, it will always be found that the attendance costs less if he does it than when it is done by the general contractor, for if the latter does it the specialist has no interest in the economy of the labour of his attendant, and he will probably keep a bricklayer or labourer always with him, whether he requires his service or not. An arrangement can always be made (though not without trouble) that he shall supply his own attendance; this course, however, has its drawbacks in the division of responsibility and the inferior quality of the work in making good. Special protection to work done by independent contractors may properly be charged as an extra on the contract if not mentioned in the quantities or specification. Some of the items of attendance enumerated in a bill of quantities by some surveyors and not by others are as follows :—Bricklaying, working in conjunction with masons in backing to masonry; cutting holes for pipes, and making good, cutting chases; carpenter, cutting holes for pipes, &c., and making good; plasterer, making good plastering to ends of bearers, &c. Examination of the bill will show this, if the estimator knows what to look for. The uncertainty of estimators as to this item is shown by a few instances as follows. The bill in each case included all the above details :—

	Brickwork.	Plastering.	Concrete.
Water Company	52 rods	2,470 yards	79 yards
Do.	31 ,,	1,840 ,,	60 ,,
Well 75yds. away	55 ,,	1,500 ,,	177 ,,
Water Company	11 ,,	539 ,,	14 ,,

		Per cent.
Cost of building	£2,000, Dwelling-house	£5=5s.
,,	£3,900 ,,	nothing
,,	£5,200 ,,	£10=4s.
,,	£2,700 { Addition to a printing office. }	£15=11s.

Other items of attendance in A—the clearing away all dirt and rubbish, scrubbing floors, and leaving all clean—sometimes with this is described the cleaning of windows, and making good broken glass; in others a clause appears at end of Glazier—B: Leave all glass clean and perfect. The following are some instances from priced bills for A :—

	Cost of building.	Amount.	Percetage on total.
Dwelling-house..	£5,300	£5	2s.
,,	£2,000	£4	4s.
,,	£3,900	£2	1s.
Addition to print-office	£2,700	£2 10s.	2s.

Probably about 2s. 6d. per cent. would meet most cases. Some instances of item B are as follows :

Amount of Glazier's bill.	Amount of B.
£121 0 0	£1 0 0
32 0 0	1 10 0
73 0 0	1 0 0
4 0 0	0 5 0

If more exactness be required, the surface of floors and glass may be ascertained from the bill. The work of cleaning them is generally done by boys or labourers at spare times. A reasonable basis for the pricing is that a charwoman at 5s. per day would clean about twelve squares of flooring in a day of ten hours. From these data the value of larger or smaller quantities may be calculated. The quantity of building rubbish will depend upon circumstances. Sometimes joinery and masonry are prepared at the building, which would increase the quantity of rubbish. When these are done at the builder's yard, five or six loads of rubbish to each £1,000 worth of work is a reasonable estimate. In a work of alteration, that proportion would be largely exceeded.

ITEMS AT CONTRACTOR'S RISK.

In a good set of quantities a definition of the word "allow" is given thus: "Wherever the word 'allow' occurs in these quantities, the cost of the item is at the risk of contractor." The zealous architect or surveyor, in settling variations, will occasionally find in an original estimate an item of this character with a sum attached, for which probably no expenditure of time or material has been incurred, and burns to deduct if intact. He is usually met by the argument: "If this item had involved an expenditure of twice the amount included in contract, I should have been forced to do it without extra charge; consequently, the item should not be interfered with." The student will hear many such arguments, which "cut both ways," and may often adopt the principle with advantage in his own defence or for purposes of attack; and in this connection the estimator may be reminded that the fallacy of an argument may often be shown by requesting the claimant to give the details of his calculation.

EXCESSIVE QUANTITIES.

There is one other consideration for the estimator which has been a frequent subject of discussion—the extent of excess in quantity that may be expected in a bill. Perhaps excess is not so frequent as it was a few years ago; but it is not rare, even now, to see 5 per cent. taken off at the end of a bill by the estimator for full quantities. No doubt the closeness of the quantities will vary with the temperament of the surveyor—the personal equation, as it has been called—who prepares them; but the general principle now is (whatever it may have been in the past) to give the exact quantity to the best of the surveyor's ability. The author of "Estimating" says: "I would advise estimators to use prices of at least 2½ per cent. higher for works measured at completion and priced from a schedule, than they use for ordinary bills of quantities." Mr. Rickman said, in his paper on "Building Risks," read before the Surveyors' Institution, "Probably it will be near the mark to state that in very careful quantities taken from general drawings only, there is an excess of ½ to 1 per cent. (and there ought not to be more), and that there are various labours taken which a builder tendering will consider either not imperative or included in the general description of the work to the extent of possibly 1 per cent. on the value of the work; these points are commonly discounted by the successful tenderer. In the case of measurement, the excess may be considered as occurring to about the same extent, though it is likely to occur in different items from those which are likely to show excess in quantities; moreover all labours, and only those which are executed, are paid for. These points are also discounted in the case of tenders on a schedule." No doubt percentages varying from 5 to 7½ per cent. have been taken off amounts of summary, and it is still the custom with some of the older fashioned builders to do so. Just as some will still omit from their pricing *all* the extra labour in a joiner's bill, or all the labour items of the stone; but a much more rational plan is the pricing every item, and realising its exact rate of profit. It may be safely said that it is most unwise to take off any percentage from the quantities or measurements of a man who knows his business.

THE SOCIETY OF ARCHITECTS' SUMMER EXCURSION.

THE following is the programme of the forthcoming excursion of the Society of Architects into Kent. Members will leave their respective homes on Monday, August 25, or before, assembling at Rochester on that day:—

11.15 a.m. Assemble at West Doorway to Rochester Cathedral. Party to be conducted by Mr. W. H. St. John Hope, M.A. 1 p.m. Lunch at the Bull Hotel, as guests of the Mayor of Rochester, Mr. J. O. Moore. 2.15 p.m. Restoration House. Party to be conducted by Mr. S. T. Aveling. 3 p.m. Rochester Castle. Party to be conducted by Mr. S. T. Aveling. 4.30 p.m. Eastgate House. 6 p.m. Tea at the Bull Hotel, as guests of Mr. G. E. Bond (member). 9.6 p.m. Train from Rochester to Maidstone, arrive 9.39.

Members and visitors who choose will sleep at the Star Hotel, Maidstone, and will assemble on Tuesday as follows:—

10 a.m. The Museum. Party to be conducted by Mr. G. Payne, F.S.A., Hon. Sec. of the Kent Archæological Society. 11.30 a.m. All Saints' Church. Party to be conducted by the Rev. J. Cave Browne. 1.30 p.m. Lunch at the Star Hotel. 2.30 p.m. The Palace and perambulation of the town. Party to be conducted by Mr. Hubert Bensted, F.R.I.B.A. 4 p.m. Carriages at the Star Hotel, to drive to Detling Church. Party to be conducted by the Vicar, the Rev. J. Cave Browne, who invites the members to partake of light refreshments at the Vicarage. 7 p.m. Tea at the Star Hotel. 8.30 p.m. Train from Maidstone to Tunbridge, arrive 9.20. Sleep at the Rose and Crown Hotel, Tunbridge. Tickets for the drive, lunch, and tea should be obtained in advance from the Secretaries of the Society of Architects, St. James's Hall, W., price 7s. each.

WEDNESDAY, AUGUST 27.

9.30 a.m. Carriages in waiting at Hotel. 10 a.m. Visit to Bidborough Church. Party to be conducted by the Rector, the Rev. H. C. Elliss. 11 a.m. Arrive at Penshurst Place, the seat of Lord De L'Isle and Dudley (by special permission). Leave at 12.30. 1.30 p.m. Lunch at the Castle Inn, Chiddingstone. 4 p.m. Carriages in waiting. Drive to Hever Castle. 4.30 p.m. Arrive at Hever Castle, the seat of Mr. E. Heard (by special permission). 6 p.m. Leave Hever and drive to Tunbridge. 7.30 p.m. Tea at the Rose and Crown Hotel, Tunbridge. Sleep at the Rose and Crown Hotel, Tunbridge. Tickets for the drive and the lunch at Chiddingstone should be obtained in advance from the Secretaries of the Society of Architects, St. James's Hall, W., price 7s. each.

THURSDAY, AUGUST 28.

8.50 a.m. Train fron Tunbridge to Sevenoaks. Carriages meet the train at Sevenoaks at 9.30. 10 a.m. Arrive at Knowle Park, the seat of Lord Sackville (by special permission). Leave at 11.30. 12 noon. British Camp. Party to be conducted by Mr. B. Harrison. 1 p.m. Lunch at the George and Dragon Hotel, Ightham. 3 p.m. Inspect the collection of flint implements in the possession of Mr. B. Harrison. 5 p.m. Tea at the George and Dragon Hotel. 6.44 p.m. Train from Wrotham to Ashford. Arrive 7.42. 8.55 p.m. Train from Ashford to Canterbury. Arrive 9.23. Sleep at the Fountain Hotel, Canterbury. Tickets for the drive, admission to Knowle House, and the lunch and tea at Ightham should be obtained in advance from the Secretaries of the Society of Architects, St. James's Hall, W., price 9s. each.

FRIDAY, AUGUST 29.

10 a.m. The Cathedral. Party to be conducted by Mr. J. R. Hall. 12 noon. The Priests' Hospital and Ruins of St. Pancras Chapel. Party to be conducted by Mr. J. R. Hall. 1 p.m. Lunch at the Fountain Hotel. 2.30 p.m. St. Augustine's College. Party to be conducted by the Warden, the Rev. Canon Maclear, D.D. 5 p.m. St. Martin's Church. Party to be conducted by Mr. J. R. Hall. 5.30 p.m. Tea at the Fountain Hotel. 7.30 p.m. Special General Meeting of the Society of Architects in the Guildhall. Sleep at the Fountain Hotel. Tickets for lunch and tea should be obtained in advance from the secretaries of the Society of Architects, price 6s. each.

SATURDAY, AUGUST 30.

8.31 p.m. Train from Canterbury to Dover. Arrive at 9.12. Carriages meet the train. 10 a.m. Meet on the Castle Parade ground, and visit the Roman Pharos, Romano-British Church, Roman Baths, and remains of Saxon Church. Party to be conducted by the Rev. Canon Puckle. 11 p.m. Castle Keep and Oratory, Constable's Tower, and Line of Defences of Norman Confederate Knights (by special permission of Major-General Montgomery Moore). Party to be conducted by the Rev. Canon Puckle. 12.45 p.m. St. Mary's Church, with notice of Roman Baths and Saxon Collegiate Church (view the waterworks if time permits). Party to be conducted by the Rev. Canon Puckle. 1.30 p.m. Lunch at the Shakespeare Hotel. 3 p.m. Remains of St. Martin's Priory—adapted to the use of Dover College. Party to be conducted by Dr. Astley. 4 p.m. The Town Hall and Hubert de Burgh's Hospitium for Pilgrims of all nations. 5 p.m. Templars' Church and Citadel. 6 p.m. Tea at the Shakespeare Hotel. 7.15 p.m. Train to Victoria—arrives 10.10 p.m. 7.20 p.m. Train to Charing Cross—arrives 10.15 p.m. Tickets for the drive to the Castle and back, lunch and tea, should be obtained in advance from the secretaries of the Society of Architects, St. James's Hall, W., price 8s. each.

Members taking part in the Excursion are requested to inform the Secretaries as to which days they will be present, and to obtain tickets from them in advance. They are also recommended to secure beds in advance at the hotels named on this programme.

Tickets for members and friends (ladies or gentlemen) will be forwarded on receipt of cheques or postal orders for their value by the Secretaries of the Society of Architects, St. James's Hall, W.

STREET CURBS.

THE use of cast iron for curbstones has been introduced in France. The inventor, M. Nicot, a contractor for asphalte paving, has applied this cast-iron curbing to side walls. The curb is L-shaped in section. The lower flange, which is connected at intervals with the upright part by ribs for greater strength, is made to rest on a bed of concrete, which is also filled in upon the flange and between the ribs, holding the segment of curb firmly in place. The asphalte is finished to the edge of curb and on a level with it. During the process of filling in the concrete at the back of the iron curb, it can be kept in place by a peg of wood secured to the ribs by a wire; or a "fish-tail" rod screwed into an enlargement of the ribs at the joints in the curb has been suggested as a preferable mode of temporary fixing. The good old-fashioned granite curb cannot be improved; but it is not always obtainable in some districts. In the Western States curbs are sometimes made of artificial stone, and the "asbestine building stone" has been used for the purpose, which is made of German Portland cement and broken stone. The curb is made in 4ft. lengths, and in section 6in. at bottom and 5½in. at top, the upper edges being rounded. There is a mortise and tenon joint at the ends, moulded in the material. It is manufactured at Salisbury, Ill. The curbing made by several of the artificial stone companies has all the hardness of granite, and is well adapted for the purpose, and we should certainly prefer artificial stone to iron.

BOOKS RECEIVED.

The Law Relating to Civil Engineers, Architects, and Contractors, by L. LIVINGSTON MACASSEY, Barrister-at-Law, and JAMES ANDREW STRAHAN, LL.B. (London: Stevens and Sons), is a brief and concisely-written summary of the law suitable for the use of the professions. The law is laid down in a practical manner, the technical or strictly legal phraseology being avoided. The cases cited are well chosen, and contain nearly every one of importance. The authors deal with the retainer and remuneration of the engineer and architect, verbal contracts, contracts with corporations, joint-stock companies, local authorities, and school boards. The important questions of remuneration, forms of agreement, death of engineer or employer, and liability are concisely discussed. A very good form of letter stating terms of employment between architect and client, in which reference is made to commission, wages of clerk of works, and other points, is appended; but we do not find any allusions to travelling expenses. A longer form of agreement between a civil engineer and a local board is given. The remarks on professional skill and competence are illustrated by several important cases. Limited experience and "reasonable care" are matters that often arise. A client cannot expect a high degree of skill in all cases, nor can an architect or engineer blame his employers if the particulars they have furnished are incorrect, when he should have tested them for himself. A professional man also should be careful not to undertake work when he does not know whether he will be successful or not. He should be chary to adopt new methods in inventions, the efficiency of which has not been established. The moot question of preliminary drawings on approval, and whether they can be charged for, is discussed. Of course, the approval of the employer is a condition precedent to payment. Clients' approval of designs, care in preparation, warranty with drawings, are points constantly arising, and the authors suggest a "non-warranty clause" as an advisable precaution for the architect and engineer. Another subject, the property in plans, is discussed. Our remarks on this head lately made are practically supported by the authors. Tenders, bills of quantities, and specifications form other subjects, and useful cases are cited. The authority of the architect or engineer as a general agent in advising alterations and incurring liabilities, their responsibilities, right to support, light and air, party walls, certificates, arbitration, and the bearings of building statutes on various questions are among the other multifarious matters touched upon. A glance over some of them show that the authors are fully aware of the points likely to arise in carrying out contracts, and their book is a very useful summary of the law and *repertoire* of legal decisions.——*Domestic Sanitary Drainage and Plumbing*. By WILLIAM R. MAGUIRE, Dublin, Assoc. Inst. of C.E. of Ireland, &c. (London: Kegan Paul, Trench, Trübner, and Co.) As a registered teacher of plumbing in the City and Guilds of London Institute and registered plumber, Mr. Maguire's lectures delivered to plumbers and engineers will be found a very complete course of instruction for the practical engineer and plumber. The book, too, will be useful to architects in enabling them to understand the modern practice and appliances of domestic sanitary arrangements. The lecture form is not the best adapted for a treatise, and a good deal of the verbiage and the bulk of the volume could be dispensed with, especially in the earlier chapters. The practical remarks on water-pressure in cisterns, and the elementary remarks on hydrostatic laws, friction of fluids, flow of water through pipes, effects of adjutages, discharge and velocity of water, atmospheric pressure, transmission of heat, and other branches of science as they bear on sewage and plumbers' work are very useful, and well illustrated. The other chapters deal with sewage disposal and sewerage, in which the author describes the various processes, and the calculations necessary to find the velocity of flow in sewers under various heads and gradients. Private house drainage, the methods of laying and jointing pipes, the modes of laying drains under houses, plans of manhole chambers showing branches, various kinds of interceptor traps, are fully treated and illustrated by engravings. The methods of ventilation are also described and illustrated. Modes of testing house pipes and drains will be found of value. The chapter on sanitary appliances is profusely illustrated by every kind of closet and sink, and water supply is fully dealt with. The book is well illustrated and printed.

CHIPS.

Mr. J. Passmore Edwards has, says the *Royal Cornwall Gazette*, very kindly promised the inhabitants of St. Day a collection of books for their use providing there be a public room secured to store them, and a few influential townsfolk to look after them. As there is no available room just now, it is suggested that a committee be formed for the purpose of erecting suitable buildings on a piece of freehold property in the old Market-house which belongs to the town. At present there is no place where the inhabitants can go in and see a daily newspaper but a public-house.

The corner-stone of the tower which is being added to Haddlesey parish church, near Beverley, was laid by Lady Beaumont on Friday.

A Wesleyan school chapel, at Bishopston, Bristol, was opened on Sunday. It is Early English in style, is seated for 300 adults, and has attached to it five class-rooms and a vestry. A chapel will be built on an adjoining site hereafter. The outlay thus far has been £8,500. Mr. Herbert J. Jones, of Bristol, is the architect, and Mr. J. Perrott, of the same city, the contractor.

The members of the Derby Archæological Society made an excursion last week into East Derbyshire, under the leadership of Mr. J. B. Mitchell-Withers, F.R.I.B.A., of Sheffield. At Dronfield the church, which contains work of each period from the Norman to the Renaissance, was seen, after which Beauchief Abbey was inspected under the direction of Mr. J. D. Leader, F.S.A. Norton Church and the Oaks, the seat of Mr. F. W. Bagshawe, were subsequently inspected.

At a meeting on Tuesday of the Cheltenham town council, a long discussion took place upon a strong recommendation of the Water Committee that a sum of £130 should be paid to the retiring water manager (Mr. McLandsborough) for services rendered, in his view, outside the duties of his office. The mayor proposed the postponement of the consideration of the matter for a month; but an amendment that the recommendation be not approved was carried by 9 to 7.

The Bristol Master Builders' Association held their annual excursion last week, and Raglan Castle was visited by between 60 and 70 members. Monmouth and Tintern were seen on the way; thence to Chepstow, where dinner was served at the Beaufort Arms, Mr. E. T. Hatherly occupying the chair.

In a recent competition of local architects for a new grammar school for the governors of the Wheelwright Charity, to be erected in Halifax-road, Dewsbury, the design submitted by Mr. J. Lane Fox, Bond-street, Dewsbury, was unanimously adopted. The outlay will be about £10,000.

The Gas Light and Coke Company are making extensive additions to their offices in Horseferry-road. The roof of the strong room is on Fawcett's fireproofing system.

Building Intelligence.

Birmingham.—The grand corridor at the Council House has now been connected with the Art Gallery by an ornamental iron corridor. This corridor is 99ft. long by 10ft. 9in. wide, and 17ft. high from floor to highest point of roof, and is constructed of iron and glass, with lean-to roof. The roof is formed of wrought-iron rafters, glazed with Helliwell's patent system of glazing. The corridor is lighted by five gas pendants of four lights each. The whole of the work has been designed and carried out under the direction of Mr. Wheeldon, of the city surveyor's office, Birmingham.

Southampton.—The Duke of Edinburgh laid on Saturday the memorial stone of a new chapel attached to the Seamen's Mission and Institute, in Royal-crescent. The building is to be formed with red brick pointed in dark mortar, relieved with Doulting stone dressings. The chapel will be 57ft. long by 28ft. wide, and 16ft. high at the sides, having half pitch roof. The interior is divided into five bays by open framed timber trusses. The contractors are Messrs. H. Stevens and Co., of Millbank Building Works, Northam, the architect being Mr. W. H. Mitchell, of Portland-street, Southampton.

Warley.—The erection of the new Friendly Chapel and Schools, Warley, near Halifax, memorial stones of which were laid on July 26, is being pushed rapidly forward by the builder, John Turner, under the direction of Mr. Patchett, architect, of Halifax. The work is externally of stone throughout. The body of the chapel, which is without galleries, will seat 375, and the school accommodates 280 scholars. The building, with the boundary walls, gates, and approaches, will cost rather over £2,000.

CHIPS.

Representatives of a number of Metropolitan Vestries and District Boards, having met in conference in St. James's Vestry Hall, Piccadilly, have appointed a committee to prepare a Bill for the purchase of the undertakings of the Water Companies.

A new Wesleyan chapel is being built at Littlebeck, near Whitby, from designs by Mr. William Watson, of Lythe. The walling is of masonry, and Mr. J. Hutchinson, of Sleights, is the contractor. Memorial stones were laid last week.

The hotel which has been erected by the Liverpool Corporation at Lake Vrynwy was opened on Friday. The hotel is built in the picturesque style of an old English mansion, with timbered walls and gables. It is situated on the top of a wooded hill, at the north-east side of the lake, and is about 140ft. above it.

Bothwell parish church was reopened on Friday, after being closed for four months for alterations, consequent on the erection of an organ. The instrument, inclosed in an oak case, has been built by Foster and Andrews, Hull. Various structural improvements on the building have been carried out from plans by Messrs. Bruce and Hay, Glasgow. An oak pulpit, communion chair and table, font of Caen stone, ornamental brass brackets and standards, and oak choir seats are among the special gifts. The cost of the organ and alterations, excluding these gifts, is £1,200.

The Metropolitan improvements proposed to be carried out by the Bill which the London County Council will promote next session will be eight in number. They comprise the widening of the approaches to the Isle of Dogs; Fortess-road, Kentish-town; a proposed new street in Deptford; an extension of the Chelsea Embankment; alterations in Fulham Palace-road and Queen-street, Hammersmith; the widening of St. George's-place, Knightsbridge, and of the Albert Embankment, Vauxhall. Local contributions varying from one-half to one-fourth of the estimated outlay will be made by the several local authorities concerned, but no arrangements have yet been effected between the bodies affected and the Council in the cases of the Knightsbridge, Vauxhall, and Hammersmith projects.

A special meeting of the Guildford rural sanitary authority considered on Saturday the question of the pollution of the river Wey, first brought to notice by the complaints of the London Water Companies, whose intakes from the Thames are just below where the Wey discharges. As the sources of pollution from trade refuse and sewage are in several different areas the Guildford authorities felt powerless to act alone, and decided to request the Surrey County Council to carry out the necessary preventive works.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

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Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLI., XLIX., L., LI., LIII., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—T. C. H. and Son.—F. B. and Co.—T. G. W.—G.W. Ry. Co.—J. K. and Co.—F. M. and Co.—E. A. and Son.—S. S. B.

Correspondence.

BERMONDSEY FREE LIBRARY COMPETITION.

To the Editor of the Building News.

Sir,—It may interest some of your readers who sent in designs for the above to know that we wrote to Mr. Harrison, Clerk to the Commissioners, asking whether windows might be opened on the boundaries adjoining the Town Hall, and were informed that they could not. Also that on the morning the designs were to be delivered, the Commissioners held a meeting, and proceeded to examine the designs which had already arrived.

Do not the conditions of competition constitute an agreement between the Commissioners and the competing architects?

If so, would not some combined action on the part of the latter be advisable?

The conditions say that the Commissioners reserve to themselves the right of selecting the design to be adopted, but do not confer on them the right of selecting a certain number and awarding the premiums without first submitting the whole of them to their assessor for his report.

Briefly, the competition has been conducted in a most irregular and unfair manner, the Commissioners having repudiated the most important conditions, and arrogated to themselves powers they were not at liberty to assume.

This is not a question of person, but of principle, and it is quite time the members of the profession took measures to secure fair-play.—We are, &c., Gibson and Russell.

34, Craven-road, W., Aug. 6, 1890.

A new infants' school is being built at Kingswear, Devon, for the School Board, by Mr. J. E. Short, from the designs and under the superintendence of Mr. C. Sewell Appleton, architect, of Torquay.

Intercommunication.

QUESTIONS.

[10323.]—**Posts of Wood, Strength of.**—Spon's "Architect's, &c., Pocket-book," edited by Young, gives this formula (based on Hodgkinson, I believe):—

W = breaking weight in tons.
L = length in feet.
D = measure of square side in inches.

When both ends flat and when L exceeds 30 diameters solid square of dry red deal. Hurst's "Architectural, &c., Hand-book" gives a formula by Rankine:—

d = least thickness of rectangular pillar.
F = crushing force in tons per square inch.
l = length in inches.
W = breaking weight in tons.

[Fixed at both ends.]

$$W = \frac{F S}{1 + \frac{l^2}{a\,d^2}}$$

a = 250 for square sections.
a = 187 for circular ditto.

What would be the breaking weights of a fir post 10ft. long of section, 10in. by 10in. flat, and fixed at both ends, calculated by both the above formulæ, and supposing the weight required to crush a short length 1in. square to be 2½ tons in each case, and alternately 3 tons in each case. I make the results from each formula so different that I fear either that I have misunderstood the working or that there is a misprint. See a question and reply, pp. 228 and 280 Building News, Vol. XXXIV., year 1878, where it says that the Hodgkinson formula (as first above given) applies only to posts exceeding 30 diameters in length, and for shorter columns the result must be corrected by the further formula, $W' \frac{W \times c}{W + \frac{3}{4}c}$, which I do not understand, nor can I understand the working of same there given, where a given breaking weight for a long post is reduced to nearly half for a short post, which appears absurd. As I do not profess to have more than a smattering of mathematical knowledge, would correspondents kindly explain the working out? Wood columns, mostly of fir, square, flat, and fixed both ends, are of such common use, that a table of the strengths of various lengths and scantlings would be very useful. Is there any such table?—J. McA.

[10324.]—**One Chimney to a Number of Domestic Open Fireplaces.**—I notice, on viewing the designs for proposed infirmary at Halifax, that Messrs. Mills and Murgatroyd, of Manchester, show the nurses' block to have but one chimney shaft, and that apart from the building, the flues to the various fireplaces on the upper floors being gathered together by downcast shafts focussed in the basement, and then continued forward underground to a high shaft, similar to those used for factories. I shall be glad if the architects, or those having experience in flue-construction on this principle, will give information showing this system to be capable of construction on a scientific basis, and where, if possible, this method has been successfully carried out.—Polor.

[10325.]—**Landscape Gardening.**—Is there any work suitable for an architect on the laying out of private parks and grounds?—Iota.

[10326.]—**Storage Reservoirs.**—How are these constructed? What should be the capacity of one in a town of 15,000 inhabitants? Any information would oblige.—Engineering.

[10327.]—**Cost of Repairs.**—Is there not some general percentage for repairs on the cost of building? What should be the allowance for repairs of ordinary houses as regards rental.—H. H.

[10328.]—**Ripon Cathedral.**—Will some reader kindly furnish me with the dates of this cathedral? Who carried out the restorations?—Yorkshire Grit.

[10329.]—**Sanitary Authority.**—A house I have just taken on lease is very defective in the drainage arrangements. Can I call upon the sanitary inspector to make an examination and report to the landlord, or how should I proceed? Has not the local authority power to call upon a landlord to do all necessary alterations?—Tenant.

[10330.]—**Rolled Iron Joists, &c.**—Will "G. H. G." or some other correspondent kindly give me a formula for calculating the size of rolled iron joists for any given span and load; also formula for calculating size of wood floor joists for any given span and load?—the load in each case to be uniformly distributed, and greatly oblige—A Student.

[10331.]—**Church Needlework.**—Will any of your readers inform me where I can obtain designs for altar frontals, hangings, and vestments, describing the symbols used?—Designer.

[10332.]—**Racquet Court.**—What dimensions are necessary for a court? Of what materials should the floors and walls be? Should the latter be cemented or asphalted? Any particulars of a racquet court and its construction, also of any existing building, will oblige.—An Architect.

[10333.]—**Rood Screen.**—Is there any good example of a rood screen to be seen in London, ancient or modern, and where?—G. F. K.

[10334.]—**Design not Carried Out.**—I prepared designs for new premises, they were submitted to some builders for tendering, but owing to the cost exceeding the sum intended by my client, he has abandoned the design, and proposes to carry out only a portion of the plan. Can I make a claim for the first design as a distinct matter at the usual percentage?—Young Architect.

[10335.]—**Wiring Buildings for the Electric Light.**—Is it necessary to describe the operation of wiring on the specification; if so, what form should the clause take? A reply will oblige.—A. C.

REPLIES.

[10309.]—**Devonshire Churches.**—I had hoped "C. H. S." would have had other replies than "G. H. G." Allow me to add that the North of Devon, and thence to Plymouth, has much of interest, and with Totnes, Torquay, Dartmouth, Torcross, Kingsbridge, Ivybridge, and Modbury as centres (where good accommodation can be had), there are several outlying old churches well worthy of study which have probably escaped the student and sketchist. To one willing to take a few miles' walk from these places before his day's sketching, or quarter on local fare (perhaps with a hamper) in the village inn where railway whistles have not penetrated, and four-horse-coaches and carriers still ply, his church and Domestic architecture and furniture has the chance of being an original publication. Some are granite, others have Caen stone dressings, showing that France was practically nearer than Bath or Corsham Down, and the style (as many words in the dialect) is indicative of Continental intercourse. "Dutch" bricks are plentiful in old parts. Any student calling at Briny Cot, Dartmouth, is welcome to advice as to the route in the South Hams from—J. Parnell Lidstone.

[10320.]—**Electric Lighting.**—One rule is, in running wires, leads left, returns right on floors or ceilings; upon walls, leads low, returns raised. The wires should be exposed to view, as it enables leakages and faults to be found. The casings or mouldings grooved for the wires may be made part of the cornice or separate, or double-grooved casings with covers are used to conceal the wires. The casings are made of soft wood, and are manufactured by Mr. Elliott, of Newbury. The woodwork should be dry, and damp walls should be avoided. The wires should be hauled taut under flooring. Dadoes and skirting boards are favourable situations for the mouldings. A pressure of 200 volts is said to be without danger, and the "cut-outs" render accidents infrequent. Fuses should be inserted at the root of each branch. The wires should be of a capacity to carry the current, or they will become heated. The insulating coverings thould be of good material. By the use of safety fuses the current, when it attains a dangerous strength, is cut off before fire ensues. Many useful particulars are given in Urquhart's "Electric Light Fitting." —G. H. G.

[10321.]—**Public Libraries.**—Cotgreave's Indicator is one of the best forms, and consists of a large frame with metal slides divided into small compartments, each containing a small reversible metal case, which holds a ledger representing a volume in the library, which records its issues. The oldest form of indicator is that invented by Elliot of Wolverhampton. The book numbers are arranged in a series of vertical columns, each number having a vacant shelf. When a book is issued, its number and the date are written on a card, and is placed on the shelf opposite the number, and remains till the book is returned. Thus the presence of a card against a number shows that the book is out. Consult Greenwood's work on Libraries, and series of articles now appearing in the "B. N."—G. H. G.

PARLIAMENTARY NOTES.

The Stonework of Westminster Hall.—Colonel Anstruther asked the First Commissioner of Works, on Tuesday, whether his attention had been called to the decay of the new stonework on the west side of Westminster Hall.—Mr. Plunket: The new stonework of the new buildings on the west side of Westminster Hall has been carefully examined, and with the exception of two or three small stones, which are evidently soft, there is no decay. Some interesting stones which were taken from the old buttresses have, however, been re-used in corresponding positions in the new buttresses, and these, having been covered up in the old buildings for many years, are, now that they are again exposed to the atmosphere, showing signs of decay on the surface; but this, after a time, will probably cease. With respect, however, to the new stonework, which has been used as a facing to the main wall in the interior of the hall, certain patches of the work are undoubtedly decaying on the surface, and, strange to say, in the same places as the decay had principally occurred in the old stonework before the repairs were effected. The architect, Mr. Pearson, is quite unable to account for this mysterious decay, and assures me that the stone selected for the work (Ketton) is the best for the London atmosphere, and this opinion would appear to be borne out by its standing well on the outside of the building. It is believed that there must be some peculiarity in the mortar of those parts of the old wall where the decay is taking place, and I intend to have the matter thoroughly investigated at once.

Decoration of the House of Commons.—Mr. Plunket, in answer to Mr. Rowlands, said the general contract in which the decorating and painting of the House of Commons was included would terminate next year. A Departmental Committee was now sitting to inquire into the question of the terms upon which new contracts for such services should be made.

An Exhibition of Architecture is to be opened next month in Turin. Prizes and medals will be awarded to Italian exhibitors, and diplomas of honour to foreigners. Conferences on architectural subjects will be held during the exhibition. The committee arranging the affair are the leading local architects and engineers. There is to be besides an international exhibition of architectural publications, which, if well supported, ought to be of great interest.

Our Office Table.

Mr. Charles Roach Smith, F.S.A., the veteran archæologist and littérateur, passed away at the advanced age of 87 years on Saturday afternoon, at his residence, Temple Place, Strood, near Rochester. Mr. Roach Smith, who was born in Hampshire, spent the prime of life in the Metropolis, and gradually acquired a valuable collection of Roman curios and numismatic treasures. This was purchased by the trustees of the British Museum some thirty years since at a cost to the nation of between £2,000 and £3,000. After disposing of his collection Mr. Roach Smith, in consequence of failing health, took up his abode at Temple Place, a mansion on the banks of the Medway, where he has spent his time in literary work. Mr. Roach Smith was one of the founders of the British Archæological Society, and a member of many local archæological societies in this country and on the Continent. A medallion portrait in marble of the deceased, executed by Giovanna Fontana, was, two months ago, affixed to the walls of the Society of Antiquarians' Rooms in London; and still more recently the same society presented Mr. Smith with a gold medal, struck in his honour, together with a surplus of one hundred guineas.

A scheme for the practical trial of co-operative housekeeping is about to assume an actual form at Bedford Park, Chiswick, where it is intended to build a series of middle-class dwellings for working artists, literary people, and professional men. The houses are to be grouped round a central administrative building consisting of a general dining-room and kitchen, &c. This block will be connected with the houses by a cloister, and the residents are to be provided at a fixed tariff, either in their own homes or at the common hall. An associated home of this kind would economise the cost of administrative detail, and by this scheme of combination some, at least, of the difficulties of the domestic servants question might be overcome. Mrs. E. M. King some years ago endeavoured to start a plan of this sort with a central garden and school, but in that case the buildings were to be all under one roof, with a school incorporated with it. At the time we published the design of this proposed home, prepared by the late Mr. E. W. Godwin, F.S.A., and Mrs. King wrote a long description of her undertaking in our pages for April 24, 1874. The idea is, therefore, by no means new; indeed, the late Mr. Allen, of Stoke Newington, who built the first model artisans' dwellings in London, for years propounded a plan of this kind, though it never was realised. This notion of his was limited to flats, the only private rooms being really the tenants' bedrooms. The Bedford Park plan is to be worked with separate dwellings, where sitting-rooms as well as sleeping apartments are to be provided, as well as bath-rooms, w.c.'s, &c., and a gas-stove pantry for private or personal requirements will be introduced, but there are to be no kitchens in the houses. There may be a large class of people without families and those who now live in boarding-houses who would take up with this plan, but it is not likely to be adoped generally, of course, at any rate, in England.

The third annual Art Congress will be held at Birmingham in November next, opening on Monday, the 3rd. The Mayor (Mr. Clayton) will hold a reception on the Wednesday, and the Birmingham Royal Society of Artists will receive the members of the congress on the following day at the Edgbaston Assembly Rooms. The papers already decided upon to be read are—"Metal Work," by Alfred Gilbert, A.R.A.; "Modern Education of Sculptors," Onslow Ford, A.R.A.; "Technical Education," Mr. Redgrave; "Design," Henry Holiday; "Advertisements," Heywood Sumner; "Sculpture as Internal Decoration," Roscoe Mullins; "Municipalities in Relation to Art Schools," Stirling Lee; "Colour," Selwyn Image; "A Gallery of British Art," J. Orrock, R.I. There will also be the addresses of presidents of sections—viz., T. Graham Jackson (architecture), W. B. Richmond, A.R.A. (painting), and George Simonds (sculpture). Mr. Philip Rathbone will read a paper on the "National Encouragement of Art," and Mr. Mackmurdo one on "Applied Art." These will be supplemented by others by John Brett, A.R.A., Stanhope Forbes, and W. E. Britten, while J. E. Hodgson, R.A., and others will deliver art lectures to working men.

The French Minister of Public Instruction and of the Fine Arts has just issued as a Grey Book a report by M. Marius Vachon on the museums and schools of industrial art in the United Kingdom. The volume is the fourth of a series of reports by the same author published between 1885 and the present time on institutions of a similar kind in most of the other European countries. It is a volume of 252 pages, containing much interesting information, and draws a picture coloured in exceedingly roseate tones of the work accomplished by the South Kensington authorities. As the result of his inquiry, M. Vachon thinks that the "insularity" of which M. de Laborde speaks in his report on the character of English art in 1851, is a thing of the past; that the country is thoroughly alive to the necessity that exists for the technical and scientific instruction of the artisan population; that the Government and the official departments equally recognise the same necessity, if the commercial supremacy of the country is to be maintained; and that much has been done, and more is in progress, to still further extend the system. Incidentally, M. Vachon seeks to disabuse the minds of his countrymen against an idea which he says is widespread in France, and which is not unknown in this country also—that the art instruction given in the schools with which South Kensington has anything to do is "uniform—cast in the same administrative mould." He has found nothing of that in his tour. On the contrary, the local arts and industries of each district are, he considers, specially encouraged, and that they should be so fostered he was informed is the view of high officials at South Kensington.

At a meeting of the Sub-Corporate Property Committee of the Leeds Town Council, held on Friday, a report by Mr. J. T. Micklethwaite, F.S.A., of 15, Dean's-yard, Westminster, was read as to the result of his examination of the ruins of the abbey according to the instructions of the committee, expressing general approval of what has been done since they passed into the possession of the corporation, and it was decided that with a view to the carrying out of the necessary works of preservation the services of an experienced clerk of works should be obtained, as recommended in the report. A letter was also read from Mr. W. H. St. John Hope, M.A., assistant secretary of the Society of Antiquaries, in which he states, "Your excavations at Kirkstall have opened up things of the greatest interest, and by the time you have done Kirkstall will certainly equal Fountains in archæological interest. When all is done I shall be glad to undertake for the corporation a proper descriptive history of the abbey."

CHIPS.

The new town hall at Portsmouth will be opened by the Prince and Princess of Wales to-morrow (Saturday) afternoon. We illustrated the building, which has been erected from the designs of Mr. William Hill, of Bolton, in our issue of Sept. 24, 1886.

The bust of the late Right Hon. John Bright, which, owing to railway delays, could not be unveiled, as arranged, by the Marquis of Ripon, at Rochdale Town-hall on Saturday, but has since been informally placed in position, has been executed by Mr. A. Bruce Joy.

For some months past litigation has been proceeding between Mr. W. C. Malton, the contractor for the construction of the Scarborough North Sea-wall and Promenade, and the Corporation, Mr. Malton claiming £7,603 for extras, in addition to the amount paid for extra work certified by the resident engineer. Subsequently when the claim was delivered the amount had been reduced to £6,353. Acting on legal advice, the Corporation paid into court £157 4s.; but the matter has been compromised by the Corporation agreeing to pay £1,000, in addition to the amount paid into court.

The foundation-stone of a new town hall was laid at Selby on Thursday in last week. The building is being erected from plans by Messrs. Thorpe and Sons, of Leeds.

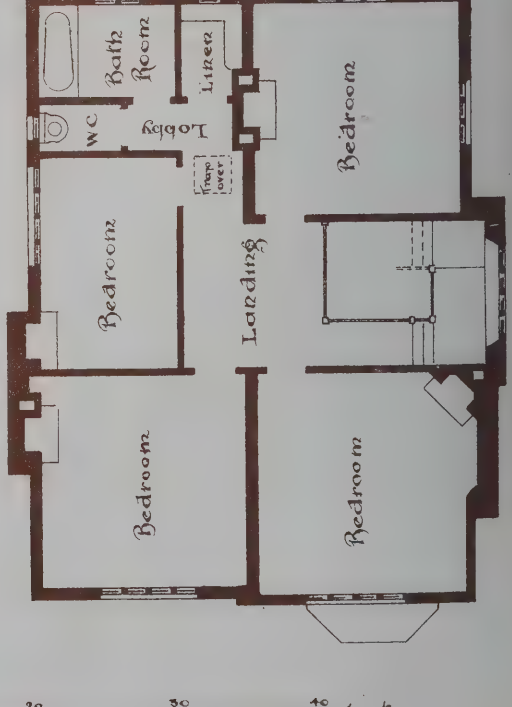
The Poulton-cum-Seacombe School Board have decided to erect a school for 1,200 scholars. A large site has been obtained, and after an examination of six board schools by various architects, the board have chosen Mr. T. Mellard Reade, F.R.I.B.A., of Liverpool, as the architect for the school.



COTTAGE · NEAR · EAST · GRINSTEAD · E·W·MOUNTFORD · F·R·I·B·A· ARCHT



Ground Plan



Upper Floor Plan

Scale of 10 5 0 10 20 30 40 Feet

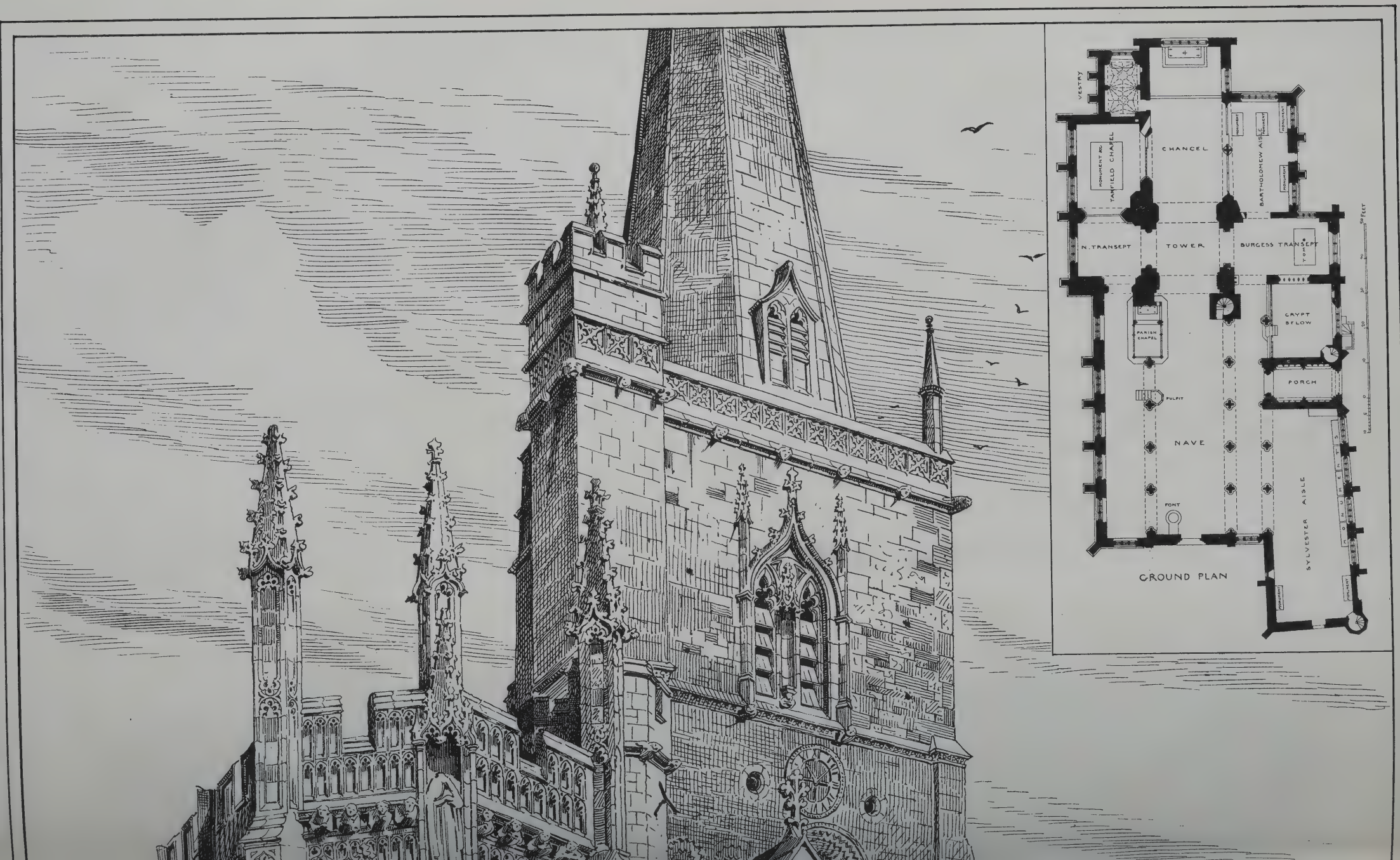
Photo-Lithographed & Printed by James Akerman, 6, Queen Square



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ONGREGATIONAL · CHURCH AND SCHOOLS · QUEEN'S PARK ·

Rowland · Plumbe · F R I B A · Archt
15 Ellsley · Square W


VESTRY
MONUMENT
TANFIELD CHAPEL
CHANCEL
BARTHOLOMEW AISLE
N. TRANSEPT
TOWER
BURGESS TRANSEPT
TOMB
CRYPT BELOW
PARISH CHAPEL
PULPIT
PORCH
NAVE
FONT
SYLVESTER AISLE
GROUND PLAN
50 FEET

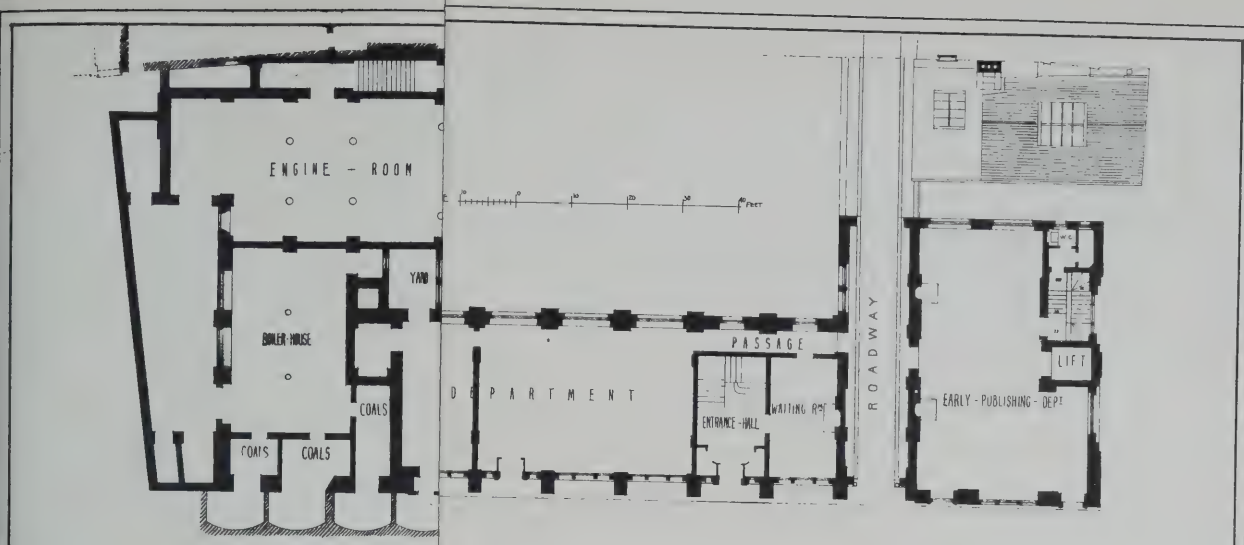


CHURCH (S. JOHN THE BAPTIST) BURFORD, OXFORDSHIRE. Sketch of S. Porch & Tower. ✝

DRAWN BY MAURICE B ADAMS. F·R·I·B·A

ARCHITECTURAL ASSOCIATION EXCURSION 1890

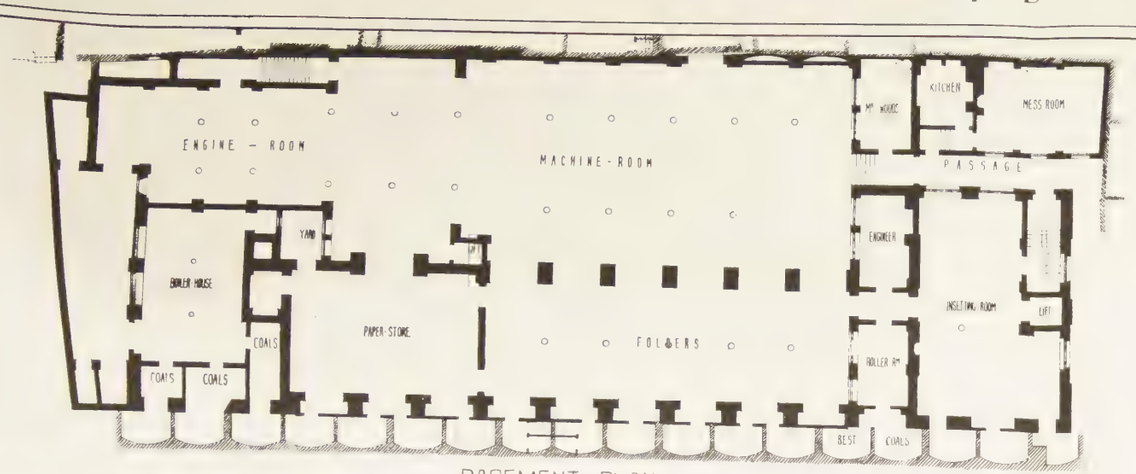
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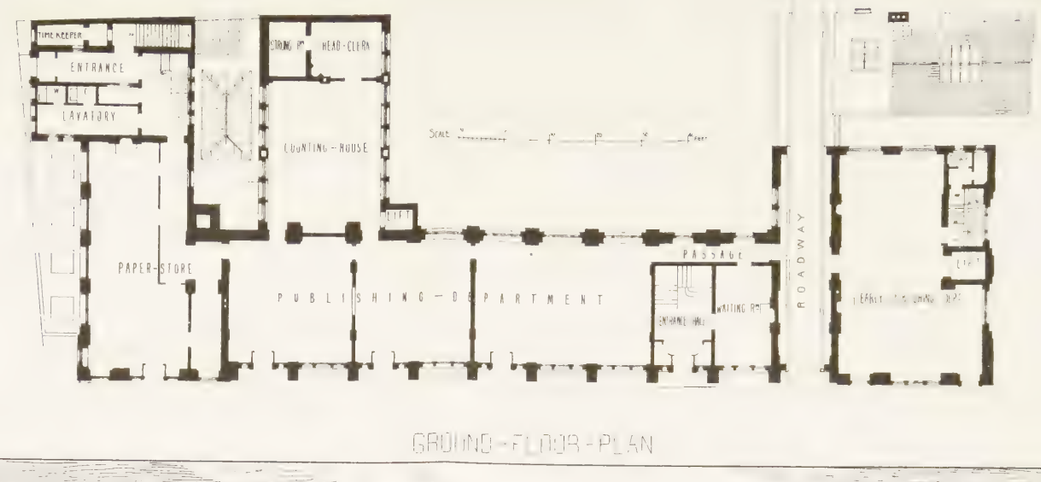




"THE QUEEN": THE LANE E.C. *SATCHELL AND EDWARDS ARCHITECTS 37 NORFOLK ST. STRAND W.C.*

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.







THE QUEEN, THE FIELD, THE LAW TIMES: PUBLISHING AND PRINTING OFFICES, BREAMS' BUILDINGS, CHANCERY LANE E.C. *SATCHELL AND EDWARDS ARCHITECTS 37 NORFOLK ST. STRAND. W.C.*

HE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LIX.—No. 1858.
FRIDAY, AUGUST 15, 1890.

CHITECTURAL IMITATION AND COPYISTS.

VE hear a good-deal of one man copying another's ideas. Architects of all n are consummate plagiarists, and they re done nothing else for the last three ndred years but copy old buildings, good l bad. It comes, therefore, with a rather l grace for one architect to assert that *his* rk has been copied, when he himself has n doing probably the same thing ever ce he commenced to practise. But there copyists and copyists. Some can only ke a likeness, or do it badly,—so badly, eed, as to be nothing less than a travesty the original; others can make improved ies. Yet be the copy what it may, the n whose work is copied should rather eem it an honour than otherwise, for it ws, at least, that his work has been appre-ed. If the copy is bad it can do the ginal no harm—rather the reverse, by way ontrast. If it is an improvement on the ginal, its author can with equal satis-ion point to his work as the first, and some pleasure that his idea has borne d fruit, and what he might have done he another chance has been accomplished a way complimentary alike to the author the copyist. Therefore we take it that original artist has not so much to com-n of, any discredit attaching to the yist who has shown a want of inventive l, and who has not the ability to see r or where to improve upon the original. s for imitation, as we look back through great historic periods of art, has not every had its imitators, good or bad? How ch the golden age of Greek plastic art d to the preceding age of Pythagoras, of ron, or Calamis? How much of the at sculptures of Phidias and Polycleitus be traced to those early artists, and to at extent the great sculptor, Praxi-s, imitated his contemporary, Scopas, questions now of conjecture. Certain r of these great masters had their tators. Thus the copies of the Cnidian rodite of Praxiteles are numerous. The nan taste, fostered by the migration of ek artists, encouraged the copy of terpieces. Thus the temples, palaces, villas of Rome were filled with copies very school of Greek art, and, in fact, e are the sculptures that now fill the tinental galleries. But the Romans, ough they were copyists, modified the final ideas, and, to a certain extent, gave a character of individuality. In archi-ure the same imitation appears in the oduction of temples and details, as every ent is aware. The Greek temples them-es were more or less copies of one another, details such as those of the orders mouldings were replicas. Surely their itects were as much chargeable with ism of contemporary structures as itects are to-day. Cannot we also find nblances between the Romanesque and ntine structures? The plans and struc-of the Western basilicas were all formed e model, in the first instance copied pagan buildings, and afterwards made uit the requirements of the early rch. No hesitation was felt in repro-g the same arrangements of apse, bema, resbytery, and choir. The basilicas of eter and St. Paul, Rome, were very alike in design—as much alike as any modern churches could be. The great ch-building epoch of Mediæval Europe us equally remarkable instances of imitation. Many of our cathedral churches are alike. Their designers built on the same plan, and tried to improve on their earlier models as time went on. In essential principles of structure and arrangement they are the same, and only in detail and in style do we notice differences. But between these instances of imitation and the later examples of the age of copyism and reproduction proper of the 16th century, we notice one important distinction. In the first, modification and improvement were always apparent; while in the latter we find whole styles and details copied, and, of course, their faults as well. The idea of adaptation appears to have been completely lost in the desire to copy the outward forms. Forsaking "common sense," as Fergusson says, men forsook the principles on which this and other arts had been practised, and commenced to reproduce simply. Thus we find our own Metropolitan Cathedral of St. Paul's more or less a reproduction of that of St. Peter's. The earlier churches of the Renaissance in France exhibit the copying of Classic façades or Mediæval plans, and the same course was resorted to in all the more conspicuous examples. When the Classical revival followed in the 18th century, mechanical copyism reached its height. Mediæval plans and façades were set aside entirely for the Greek and Roman models. Our modern copyists are happily not imitators in this sense, or in the copying of Gothic buildings which followed. The Cinquo-Centist went back at least a thousand years, the Gothic revivalist from three to five hundred years for his models. They entirely ignored what had been done in the interval. It cannot be so servilely bad to imitate a modern building as one that is estranged from us by a period of five hundred or a thousand years. That was indeed copyism of the most slavish form, for architecture proper was really dead.

It appears ridiculous, therefore, to bring charges of copying against some architects of the present day when we have these records before us. Comparing the copyist of the early part of the present century with the imitator of to-day, we can only say that the latter is less a delinquent, he works within touch of his own time, and he selects a model that appears to him to meet the requirements. One practised a system of mechanical imitation without restraint, the other follows the earlier Renaissance artist in selecting and adapting a model for his purpose. There have always been weak as well as strong imitators; but imitation of some form there has always been, as one of the essential processes of a growing art. The most imaginative artist cannot be always inventing new forms or new styles, a truth painfully brought to our notice in many of the abortive attempts that have been made. Reasonable imitation has always been accompanied by variation, and successful imitators invariably evinced discretion in selecting their model or type, and in varying it to meet the circumstances. The gifted architect spurns the word "imitation," yet when he comes to think of it he is more or less engaged in imitating whenever he prepares a design; he adopts the conventions and types which suit him, he copies a feature here and a moulding or detail there; but he does so without becoming chargeable with mere copying. The highest kind of imitation has been said to imitate Nature—not what she presents, but her mode of operation. The true artist will not make a likeness, but discover that which is common to a certain class, and omit all that is peculiar to each. Thus the artist with the largest stock of ideas, who can select what he is in need of, is the most successful imitator. Sir Joshua Reynolds says he who "never ransacks any mind but his own will be soon reduced from mere barrenness to the poorest of all imitation; he will be obliged to imitate himself, and to repeat what he has before often repeated." We perceive it every day in designs made by men who have no materials to work upon, and, therefore, if they copy, they copy something unsuitable to the purpose. These are the weak copyists.

When we speak of originality in architecture, we generally mean a "new combination of images which have been previously gathered and deposited in the memory," to quote again the same author, for as he says, "he who has laid up no materials can produce no combination." The richly-stored mind of the architect who has retained what he has seen, and can rearrange and combine, can only copy in this sense. If he has to design a tower and spire, ideas of arrangement and grouping are suggested by models such as those of Salisbury Cathedral, St. Mary's, Oxford, Lichfield, or the plainer types of Stamford or Polebrook. Some of the late Sir G. Scott's most beautiful structures of this class are imitations, generalised, not literal, copies. To the uninitiated eye the likeness might be strong, but it is no stronger than when we say one tree resembles another, or one flower another of the same species.

There are two kinds of copyists besides the strong and the weak, those who copy and reproduce foreign examples and those who copy works at home. Our thoroughfares are filled with bits from Italy, France, Belgium, and Holland, about which nobody ever thinks of charging the architects with plagiarism, these designs being as much common property as quotations from Shakespeare or from Byron. On the contrary, those who copy a design recently carried out receive all the reproach and opprobrium arising from so contemptible a proceeding. It is characterised as "barefaced robbery"; "stealing the brains" of another artist, and other uncomplimentary epithets, are applied to the luckless copyist. The copy may consist of a front, or a gable, or a tower, or some other feature. Perhaps, after all, it is but a copy of a copy; the process of descent may be positively downwards, and, if we could compare the last repeat with the original, it would be seen there was a decided degeneration in the details and design.

The question, after all, is whether the repetition is a mere slavish reproduction of external form without a legitimate motive, or correspondence of plan and design, or whether the architect has selected the treatment because it best expressed his intention and purpose, as an author would not scruple to borrow a sentence from a great writer which expressed his meaning. An architect can, of course, register his designs, or "patent" any arrangement he pleases, if he thinks fit, but this is not resorted to very often; indeed, it would not be so easy to discover the limits of invention in design of this sort. As we have said, the disgrace of a bad copy falls upon its perpetrator; he alone is responsible for the folly or the unsuitableness of the design he has adopted, and if he drags in a feature from another building which has no apparent connection or agreement with his own, he commits a flagrant mistake which cannot be justified. It is this sort of copyism which has reflected so injuriously on architects and the art they profess. Those who wished to read history and development in buildings were shocked to find Greek porticoes tacked on to 19th-century churches and town halls, 13th and 14th century details used for modern Gothic villas, and even Romanesque adapted after eight centuries of disuse. This was a flagrant falsification of style. It is quite as dishonest to copy a circular stair turret as a mere ornament, a loggia in a façade when it has no meaning, or a gabled front without reference to any internal division of a building. The copy of Queen Anne, Jacobean, and Georgian features, such as gables, windows,

doors, chimneys, &c., has been carried to a degree which prompts us to ask whether there is anything in those features which admit of repetition in our modern buildings. The revival of brickwork is one of the reasons for imitating those styles, and as far as the treatment of this material is concerned there has been justification. But copyism has gone farther than this for the sake of picturesqueness. Few contemporary architects have been more copied and travestied in those styles than Mr. Norman Shaw and Messrs. George and Peto. They have imitated older work, their disciples have copied them, till we find replicas of gable ends, chimney shafts, oriels, chimney-pieces, and interior details in every house in the suburbs. Nor will the tide of copyism in art ever be arrested by any restrictive measures. There will always be those who live by repeating what others have done, well or ill. Progress and development in architecture have been accomplished by continued repetitions, with such modifications as time and circumstances have dictated, but only the few can discern an improvement and set the example of a new type.

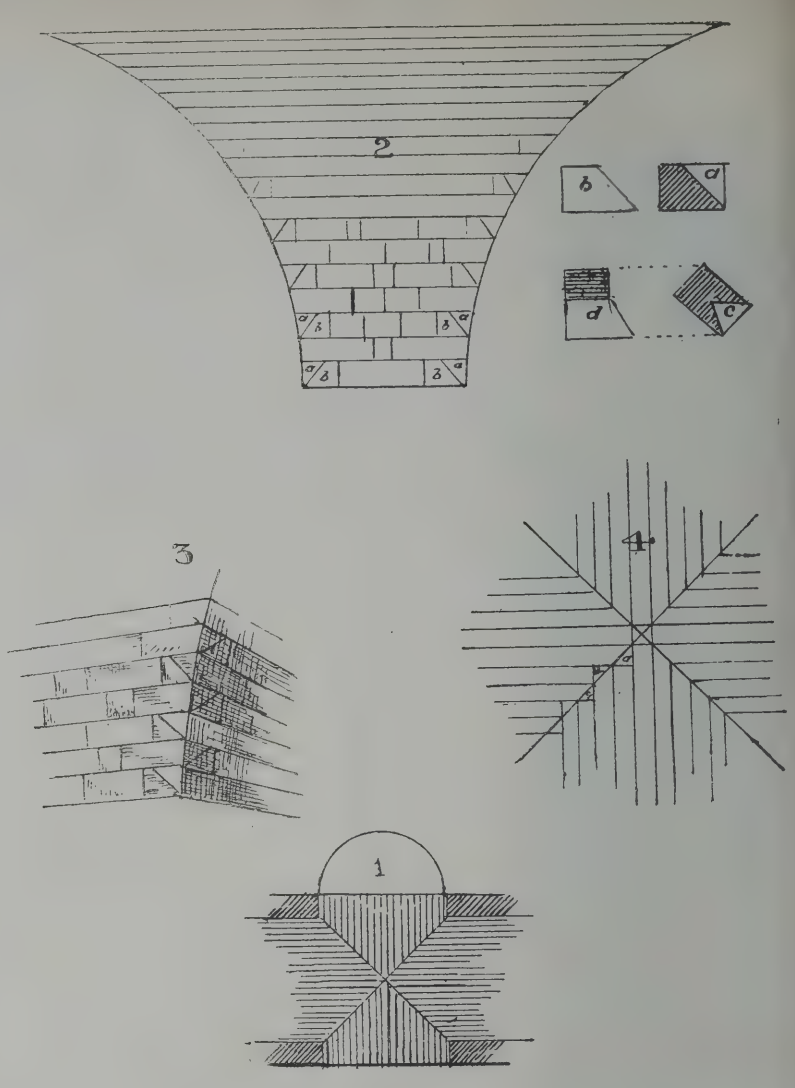
ARCHITECTURAL BRICKWORK.—XXXVII.

GROINED VAULTING.

THIS forms a distinct and more advanced branch of the brick-cutter's art. It is needless here to describe what a groined vault is, as everyone knows that if two cylindrical vaults intersect, the lines of intersection are ellipses, and these form the groins of the semi-vaults. In the execution of these groins considerable care is required in cutting the bricks, to which subject we shall only generally allude here; but we recommend the student to study the subject in a practical manner by the use of models or by attending the lectures in a technical school. Let us suppose Fig. 1 to represent the plan of a groined vault showing the intersection of two arches of equal width. The principal points to which attention are to be directed are the inverted ridges of the groin, or those angles on the underside of vault where the intersection takes place. The bricks are cut to fit the hollow formed by the centring of the arches, in a manner that will avoid a mitre, which would be formed if they were cut diagonally. Such a mitre joint would be weak, as the edges of the bricks would be apt to break off, and the groin lines or arrises would be imperfect. On this account it is necessary to lay the bricks at the angles of groin to overlap each other, as in ordinary bond—that is, as headers and stretchers.

CUTTING.

We will here quote Col. Pasley's remarks on the mode of cutting the ends of those bricks which show as headers in alternate courses. They are cut in three different ways. "1st. They are cut to the proper angle of the groin, so that whilst one side of them rests on the woodwork of one centre, without cutting, the end of them is made to fit the other centre, and enter closely into the hollow between. 2nd. In the lower part of the groin, until within about 45° of the crown of the arch, the back or under side of the heading brick is cut away for about half its original length, in order that the next brick which meets it at right angles may be notched into it. The notch is usually in the form of a trapezoid or triangle, and the brick fitting into it is usually a closer, which naturally assumes the form of a trapezoid. 3rd. As all the arch bricks on both sides are necessarily inclined at the top, so that the natural tendency of the courses is to meet each other like two slopes of a glacis, the upper part of the end of each brick which appears as a header on one side of a groin is cut off so as to agree with the slope or level of that particular side until it meets the other slope in the direction of the ridge."



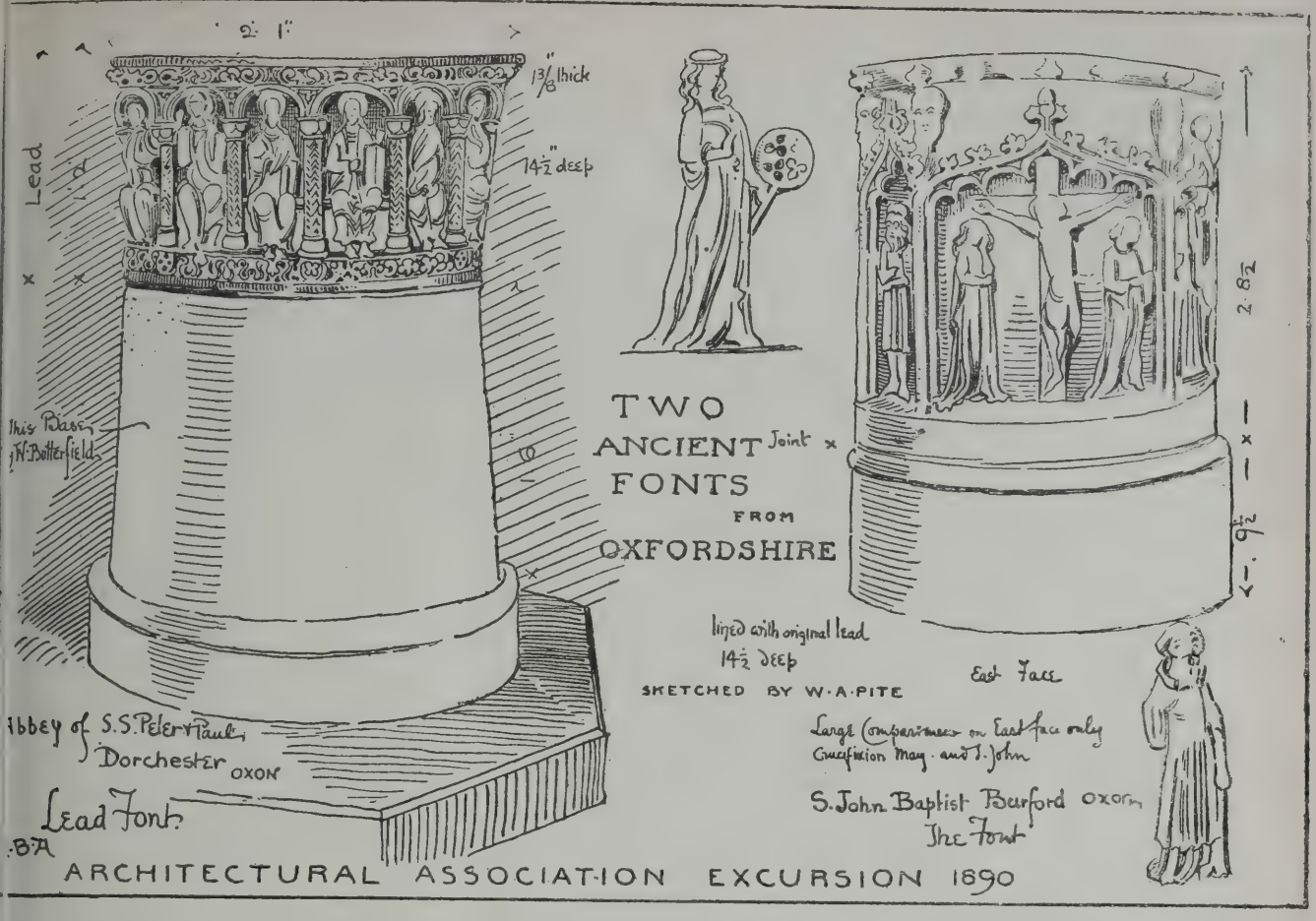
These observations will be more clearly illustrated by referring to the figures. Cut 2 represents an elevation of the arch between two groins formed by a pier or two intersecting arches. It will be noticed that every alternate header is notched in the way described, and forms a triangle, *a*, *a*, while the closer next to it, *b*, is trapezoidal in shape. The diagrams of the bricks on the right side, the letters *a* and *b* corresponding, show the form of the headers at the lower part of groin or arch. Thus the header *a* has its lower portion cut away in the form of the shading in the figure to fit the trapezoidal closer *b*. In this manner the stretchers of alternate courses notch into the return side of groin, and form headers thereon. The bricks higher up on the groin assume the form of Figs. *c* and *d*. The header *c* is triangular, but less of the lower part is cut off; the top of the adjoining closer *d* is cut to correspond with the slope of the header course as shown, If the reader imagines the header *c* and the closer *d* placed close together, it will be seen how the notching in this part of the groin is formed. Higher up still on the groin the under part of the header is cut off to a less extent, as it then begins to agree with the angle of the voussoir.

STRENGTH OF GROIN BRICKS.

Colonel Pasley very justly doubts the strength of this mode of cutting, which has been adopted by bricklayers more for the sake of appearance than for any other reason. The closers are small pieces cut to the trapezoidal shape, and are placed with their largest end downwards; therefore it is only the pressure and the mortar that retain th in their place. They add little to strength of the arch because of their sh and the manner the header is cut for th Thus the inside end of closer, instead of b square, is rounded, this being the f best suited in cutting the end of the n in the header in a material like brick. 3 shows the appearance of a groin cu the manner described; while Fig. 4 sh on the plan the overlapping of e alternate course in the groin, as at *a*, *b*,

VALUE OF MODELS.

The student who has followed our rem thus far will have come to the conclu that the only satisfactory manner of lear the mode of cutting and bonding groin b is by the use of models. The proper for model would be "centres" intersecting another in the manner of the actual ar but to a smaller size. These may be in cut out of a solid piece of wood. Al joints of the courses would be drawn on centre. Small blocks of wood represe the proportions of bricks then being pared, the student would be able to tes real understanding of the mode of not and cutting the alternate courses at the g By putting together the bricks, the st would learn more of the requirements cutters' art in half an hour than he wou several days by the perusal of treatises diagrams, the most unsatisfactory mo learning anything in which solids and c surfaces, like those of groins, are conce In masonry the problem of groining is simple, as the lines are formed by geome methods, and the stones cut to m worked from the lines. The groin ston larger solids, and both sides or faces groin, together with the angle of groi



ut of one block of stone, the ends being t right angles. Thus all notching and ng off the angles of headers are dispensed .

HITECTURAL ASSOCIATION EXCURSION INTO OXFORDSHIRE.—II.

[TH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

ONDAY'S proceedings, devoted to the inspection of several of the old and new e buildings and schools in Oxford itself, most instructive, while the weather was all could be desired. To epitomise the hisl and archæological wealth of such a city as d is practically an impossibility, and the available here for such a synopsis, when uch could be said, is far too limited to t even an attempt in this direction with any e of success. We have, however, frely described at some length many of the ersity buildings, and no journal has more natically illustrated the new buildings in wn and additions to the colleges than the DING NEWS. There is scarcely a work of importance in Oxford, erected in recent , of which drawings have not appeared in pages. The foot-note at the end of this nt of the excursion will indicate some of ore noteworthy illustrations which we have lately published.

e first buildings seen on Monday were those *rist Church*, naturally the most important ectural group in Oxford. Founded by Car- Wolsey, this vast academic institution ped into one of the grandest and most guished colleges which England has ever Sir Christopher Wren's world-famous n" Tower (1682), built over the principal nce to the great Quad; the hall, the largest inest in the city, built by Wolsey and ed by him in 1529; and the cathedral, the distinguished Cardinal converted into ollege chapel, form its leading features. is no better piece of work in the whole of d than the new Belfry Tower in the angle rist Church Quad, over the great staircase, "one Smith of London built" (in Late r times), leading up to the great hall. This was designed by Messrs. Bodley and er (illustrated in BUILDING NEWS, June 27, 1879), and the tone which a few years have given to this masterpiece has enhanced its beauty. The work which Sir Gilbert Scott did in the cathedral has unfortunately not improved correspondingly. The reredos in red Dumfries stone, with dull, polished Rosso Antico statues in the niches, which Mr. Bodley erected five years ago, at the back of the high altar in the cathedral, is a very successful composition, and the side hangings in green velvet, embroidered with blue and gold thread, are exceedingly effective. The frontal was executed by the dean's daughters. The silver gilt candlesticks and the alms dish (1660-61) are particularly good specimens of metal-work, and the mountings to the altar books (1638) are equally delicate in detail. A new font in Rosso Antico has been added in the south transept in St. Lucy's Chapel, and Mr. Burne Jones's windows at the east end, north of the choir, are worth seeing again and again. The best carving of old date in the church is on the shrine of St. Frideswide. The pulpit in the Latin Chapel we shall illustrate by a detailed sketch next week, drawn by Mr. Thomas MacLaren. We shall also publish a view of the choir, showing Wolsey's fan vaulting, drawn by Mr. Phené Spiers, F.S.A. The Jacobean pulpit in the nave is very rich and handsome. The screen at the west end of like character was illustrated in the A.A. Sketchbook, Vol. VII., new series. After seeing the kitchen, cloisters, chapter house, the library and pictures, the party passed Peckwater Quad, with its coarse Classic detail, and reached Merton College, noting Mr. T. G. Jackson's new buildings lately erected for Corpus Christi College. The façade is very good, of course, but the ground arcade arches set rather uncomfortably on their caps, which look crude with the chamfer moulding below and orders to the arches above.

Merton College has a noble chapel formed by the enlarged choir, central tower, and transepts of the once parish church of St. John, which stood on its site originally. Walter de Merton, its founder, lived to see the dedication of the high altar in 1276. The chapel, restored by Blore in 1838, and since done up by Mr. Butterfield, the roof being painted by Mr. J. H. Pollen in a curious style, contains some fine old glass, a grand lectern in brass of 15th century date, and two good monumental brasses. The sacristy, till lately used as a brewery, has just been repaired, and fitted with hardwood cases for the college MSS. by Mr. Jackson. The windows to this building are beautiful specimens of Decorated work, and the opening looking into the sacrarium at the rear of the sedilia in the chapel is unusual rather. The library at Merton College, with its ancient Jacobean fittings, old plaster mural work, and original coloured glass, is the best of its kind in the city. The hall was spoiled by Wyatt, and not much improved by a subsequent restoration, but three years ago some good decorations were done in it. The original 13th century iron hinges of elaborate character remain on the ancient entrance-door. Mr. Butterfield's new wing, added some years ago, is a most uncomfortable and unsuitable piece of design, and one wonders how so competent an architect could produce such a poor façade.

Magdalen College formed the next group of buildings to be seen, and Messrs. Bodley and Garner's new gateway and range of buildings were deservedly admired. The want of harmony in the scale of some of the parts is conspicuous here and there, more particularly on the High Street front; for instance, the caps to the wall piers under the corbels of the oriels have the most minute crestings, while almost immediately in juxtaposition the embattled sills are quite unusually coarse and heavy. The carvings on these buildings are excellent. The Magdalen tower is too familiar a feature to be described; its upper stage was restored a year or two since, and has been well done.

New College was reached after leaving Magdalen, and here we fancy Mr. Jackson has been at work in the chapel, adding canopies to the seats on either side of the sacrarium. The cloisters with their arch-ribbed roofs are being stripped of their tiles for renovation. The hall, approached through the second tower, is the most ancient one in Oxford, and is built almost above the old city wall. The panelling is rather good, and the hall contains several interesting portraits. Sir Gilbert Scott re-roofed it some years ago, and he built the long range of students' lodgings in the slype overlooking Holywell-street. This block is correct and solid, but devoid of interest. Views of New College will be found in the A. A. Sketch-book, Vols. II. and III., new series (1882). Walking now from New to Wadham College, the party passed Mr. Basil Champneys' Indian Institute (illustrated in BUILDING NEWS, February 27, 1885)

a building of great merit, with an originally-treated angle tower, well designed at the top, the whole piece of work harmonising well with the reposeful architecture of Oxford. Some of the ornament enriching seems to look stuck on, and there is a lack of true beauty in some of the animal carvings.

At *Wadham*, the hall, like the rest of the college, built by Nicholas Wadham in 1613, is hardly in a pure style, but there are some good pictures in it for those who like portraits. The chapel is much more worthy of note, with a "Free Classic" brass lectern with an eagle of ugly shape upon it, but with the feathers charmingly treated in detail (illustrated in Building News, June 4, 1886). The black and white marble check-board steps are very unhappy in effect in front of the altar. This chapel has transepts like several others in the University, with arcades dividing off the wings very prettily, and a wide arch over the rich chapel screen at the west end, which is very effective. Mr. T. G. Jackson restored the chapel and added a good organ in the ante chapel. It is a trifle flat in the upper part, but is a first-rate piece of work. The gardens at Wadham are very secluded and beautiful, with some fine cedars.

Retracing their steps past the Radcliffe Library and St. Mary's in the High-street, the excursionists proceeded to view Mr. T. G. Jackson's great work—the Examination Schools in the High-street (illustrated in the Building News, June 27, 1879), and there can be no doubt as to the thoroughness with which his modern group of buildings has been carried out. It is, on the whole, one of the more satisfactory compositions in Oxford, showing individuality in all its details, some of which remind us of Kirby Hall and other similar old examples, but there is a good character in the work which very few architects are able to insure. It is unfortunate that even already the stonework should be perishing. We refer to the cornice in the quad, on the face of the first chimney projection, where the work is crumbling away. This is the misfortune of almost all the old buildings in Oxford, giving them a gloomy and heavy effect sad to behold. Refacing is going on everywhere, and for many years will furnish work for the mason. The after part of the day was spent in sketching or in visiting other colleges. The Mansfield College, at the back of Holywell, an extensive new work by Mr. Basil Champneys, is a theological school erected by the Nonconformists, and after carefully inspecting the building, we can speak in no measured terms of its merits. The design is thoroughly good as a piece of building, artistically treated, well proportioned, and full of character and go.

The weather on Tuesday was most propitious for the holiday outing, when the first halt of the drags was made at *Iffley*, where the church was seen. It was built by Dame Juliana de Sancto Remigio, and given to Kenilworth Priory about 1160. The building is one of the most familiar specimens of Anglo-Norman architecture in the country. Its chief interest centres in the original west front, which is characteristically rich, with a portal elaborated with emblems of the zodiac introduced in the arch mouldings. Buckler, the well-known architect, restored it many years ago. The chancel arch has an unusual treatment of large sunflower-like carvings along the moulding. The chancel is Early English, but on the south side is a blocked-up doorway, which if opened through the wall would cut into a triple sedilia inside.

A view of Iffley Church was the subject of a double-page illustration in the Building News for Jan. 23, 1874. Another view will be found in the A.A. Sketchbook (old series), Vol. VI. The so-called buttery hatch in the rectory-house hard by, with the ornamental pillar dividing the opening, is rich in detail, and curious, and worthy of a note, but it is not at all likely to have been originally used for this purpose. Most probably it was a piscina, or it may be a make-up. The church is admirably kept. A smart drive of about an hour through a very pretty part of the county brought the Associationists to *Dorchester* Abbey Church, which stands near the confluence of the Thame and the Thames. Its history dates from the foundation of St. Birinus, who dedicated his building in the 17th century to SS. Peter and Paul, and made Dorchester an episcopal see. Remigius, after the Conquest, removed the chair to Lincoln in 1086. Before this, Dorchester was the largest see in all England, comprising the present dioceses of Winchester, Salisbury, Oxford, Lichfield, and Worcester. The church is an exceptionally long one (measuring 300ft.) as compared with its width. The entire structure has been restored, except the Chantry Chapel to the N. side of the N. aisle to the chancel. We gave a plan last week in the Building News. The church was bought by Richard Bewforest at the Dissolution for £140, and bequeathed to the parish by him in 1554. Its dates are various; but it was chiefly between 1280-1300. The Western Tower, the whole width of the nave, was re-erected in Charles II.'s reign, with the old material of the earlier Tudor work. The south aisle is unusually wide, and contains the monument of an abbot. Sir G. G. Scott restored the S.E. chapel in 1874, and Mr. Wm. Butterfield restored the church in other parts, and the late J. M. Bignell renovated the remainder at the east end, beginning with the reredos. The chancel is the most remarkable portion of this grand building. The east window, of Late Decorated character, is filled nearly entirely with tracery, and has sculptures in it representing the Life of the Saviour, and local traditions, such as St. Birinus converting Cynegds; St. Oswald, his sponsor, &c., carved in high relief. The Jesse window on the north side (1328) is, of course, very famous (see illustration), with the genealogical tree bearing figures, having its stem on the central mullion springing from the loins of the Patriarch Jesse, who reclines at the base. The lateral tracery represents the branches, and on each is a statuette of one of the House of David. The stained glass enters, too, into the scheme of the design. The font is a Norman lead bowl, moulded with eleven figures of the Apostles, draped in Byzantine folds, introduced in arched niches. It is raised on a plain circular base by Mr. Butterfield, and is a very rare, rich piece of old work. We illustrate it to-day. The brasses, though broken mostly, are numerous and interesting. Among them is that of Sir Richard Beauforest, abbot, 1510, tonsured and holding a pastoral staff. Out of his mouth proceeds the mutilated ejaculation, "— Virgo Virginum ora pro nobis tuum filium," and at his feet the couplet:—

Here Lyeth Sir Richard Bewfforeste: I
pray Jh'u geve his sowle good reste.

The sepulchral slab, enriched with the following inscription in Lombardic capitals, once covered the mortal remains of Abbot John de Sutton, of Dorchester (1333—1349):—

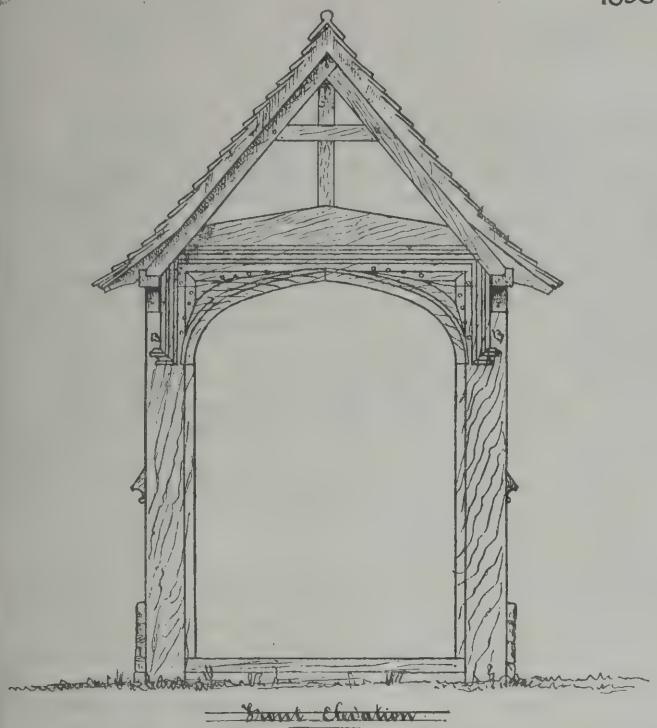
ABBATS : GESSIT : VICES : HIC : QUI :
REQUIESCIT : JO : HAN : DE : SUTTONA :
DICTUS : QUEM : CRISTE : CORONA.

Chief Justice John de Stonore, who died 1354, has an effigy in legal costume, and on the north side is a handsome Tudor altar tomb, dated 1400, to a Segrave, surmounted by a knight in plate armour. A drawing of the doorway to this church will be found in the A.A. Sketchbook (new series), Vol. VII. The projecting corbel on the nave pier, which furnished so much speculation as to its intended use, is illustrated herewith to-day, and also the angle door leading to the roof turret in the S.E. chapel by the side of the piscina. There are two side chapels in use at this church, and the building is remarkably well cared for and served. The restored cross in the churchyard is a good one, and so is the massively constructed oak lych gate.

The last place seen on Tuesday was Ewelme, with its church, hospital, and grammar school, all built adjoining, and thus forming one charming group rising each above the other in picturesque order. We shall give a complete plan next week of the whole set of buildings, copied from that drawn by Mr. F. T. Dollman in his "Analysis of Domestic Architecture." The church is said to be a sister building to that of Wingfield, in Suffolk, and both were built by the Wingfields. Between the chapel of St. John and the chancel is the tomb of Alice, the foundress of the hospital and church, the Duchess of Suffolk, granddaughter of Geoffrey Chaucer, and widow of William de la Pole, Duke of Suffolk, who was beheaded at sea off Dover. The effigy is one of three known examples of females decorated with the insignia of the Order of the Garter. Beneath is an alabaster skeleton figure surrounded by curiously-feathered statues of angels with Greek-like faces bearing heraldic shields of the De la Poles. The sacred building is said to have been preserved by a local landowner from the desecrations of Cromwell's soldiers and agents of demolition employed by the Puritans, so that thi tomb and the figure ornamentations generally c the church are uncommonly perfect. There ar no less than fourteen brasses in the building The church, with its square western tower, is a exceedingly fine specimen of the Perpendicula period chiefly, and it contains a magnificer carved timber ceiling in the St. John's Chapel an elaborate tabernacle cover to the font, an good roofs. "God's house," as the hospital c almshouses were called, founded by Dame Alic are of Early brickwork, with a timber cloiste over which rise a series of rich quaint dormers t the upper rooms, elaborated with good barg boards, like Leicester's Hospital at Warwick The plan, which we shall give, shows th arrangements of the rooms, which provid accommodation for thirteen old men, who ar presided over by the venerable Sir Henr Acland, Bart. The school-house is of stone, an accords with the other buildings. We illustrat the south porch of the church to-day fro measured drawings by Mr. Walter L. Spier A.R.I.B.A.

Stanton Harcourt, an hour's drive from Oxfor was the first place visited on Wednesday. Th church, dedicated to St. Michael, is cruciform with a 12th-century nave and chancel of the da of Henry III., with a triple lancet at the ea end like those on the north side. On the sout of the chancel is the Harcourt Chapel, erected i the time of Henry VII., when the mansio adjoining the churchyard was built. The ais is a specimen of debased Tudor work, with a open quatrefoil parapet and square - toppe pinnacles. It is filled with Harcourt tombs, an has large windows of Perpendicular characte We give herewith a sketch of the church, with plan from the note-book of Mr. Wm. A. Pit The screen to the chancel is a unique example Early English oak-work, contemporary with th arch which incloses it. The mouldings of th masonry and woodwork exactly correspond. Th two side compartments are each filled with fo cusped arches, divided by turned columns havi caps and bases, and the doors, which are hun folding, have each two similar arches of small proportions. The lock is original also, a worthy of remark. This screen is the earlie wooden one in England. The manor of Stant Harcourt has been for six hundred years th property of the Harcourts. In the chancel the church is a rich altar tomb (see Buildi News, August 14, 1885), with a beautiful cano over it, carved and emblazoned with arms, whi prove it to have been erected to commemora some person of this ancient family. It is believ to have been erected to Isabel, daughter a heiress of Richard de Camville. She marri Robert de Harcourt, and died in the days Edward I. There is no reason to doubt that th structure was used as an Easter sepulchre. the north transept, on a small, round, blue marb inserted in the pavement, is a brass curious illustrating the way in which the arms of Be and Harcourt were united. We give a diagra on one of our lithographic plates to-day showi this, under the view of the kitchen at Stant Harcourt. Sir Richard de Harcourt, son William and Hilaria, daughter of Henry, Lo Hastings, married Margaret, daughter a heiress of John, Lord Beke, of Eresby, wh arms were divided between Sir Robert Willoughby and Sir John de Harcourt; and t above-mentioned stone is probably in memo of Sir Richard Harcourt and Margaret Bek he died 1330. Congreve wrote the epita on a tablet on the outside of the chur on the south wall to the memory of two lov killed by lightning. The front of porter's lod to the manor house road remains in its origi unaltered form. In the house the princi apartments were the great hall, the great s little parlour, the Queen's chamber (so cal from its having been occupied by Elizabe Queen of Bohemia, when she made a visit he with other chambers, which filled the sp between the domestic chapel on the ground fl of the Pope's tower and the kitchen. Th remained entire until the end of the last centu The kitchen, of which we give a sketch to-d taken from the high road, together with a grou plan and two other views, bears some rese blance to the Abbot's kitchen at Glastonbu though it differs in many particulars, the la being an octagon on plan inclosed within square, whereas this is square inside as well out. The upper part, however, is octago with squinces across the angles carrying

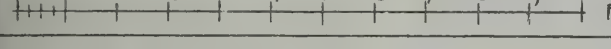
ARCHITECTURAL ASSOCIATION EXCURSION 1890

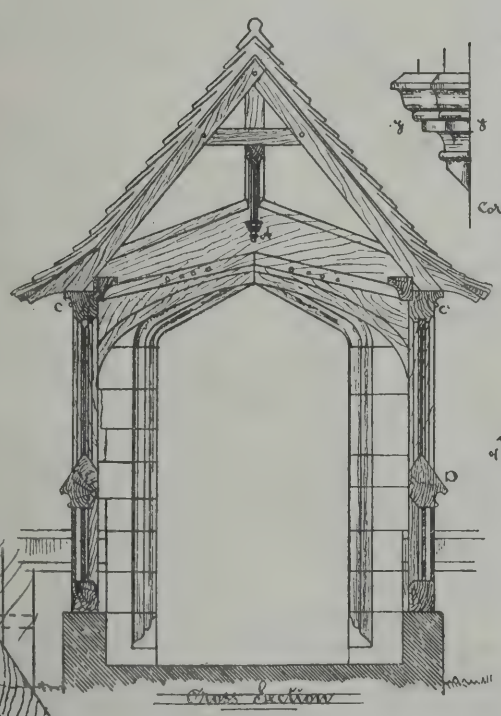


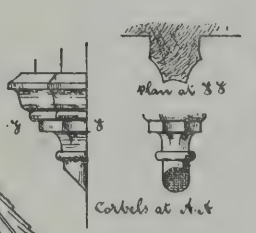


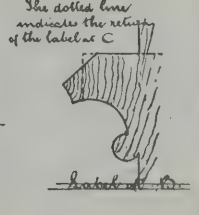
EWELME CHURCH OXON — SOUTH PORCH

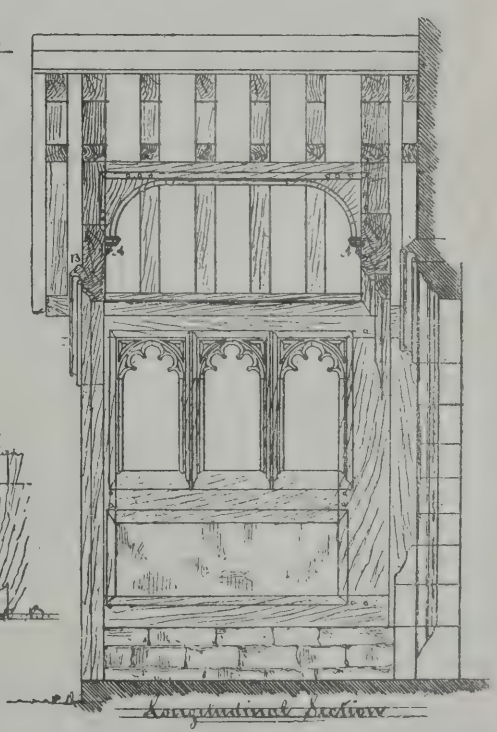
MEASURED & DRAWN BY WALTER L. SPIERS A.R.I.B.A

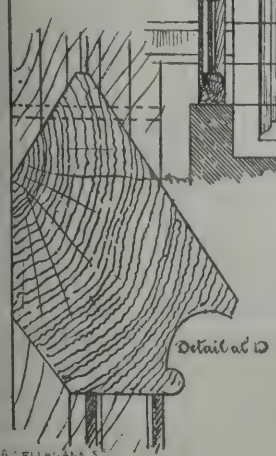


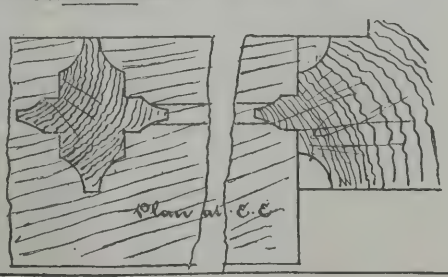


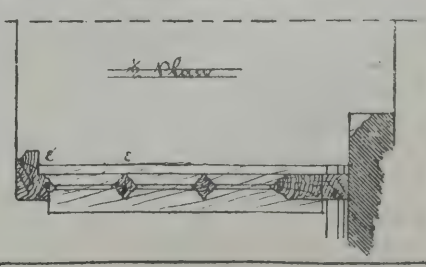












lantern, the eaves of which are seen in our view just level with the top of the parapet. There is no chimney, and the newel staircase in the angle turret leads to the passage round the battlement. The octagon lantern was fitted with shutters to give vent to the smoke according to the quarter from whence the wind blew. The cooking was done by "dogs" on the hearth, in the middle of the kitchen mostly. Inside the timbers are perfectly black, and the place has long been used as a wood store. The height of the walls to the bottom of the roof (which in the centre rises 25ft. more) is 39ft., and the griffin, bearing the Harcourt arms, on the point of the cone forming the finial, is 8ft. high. On plan the building measures from east to west 33ft., and from north to south 31ft. This was built in the reign of Edward IV., and the Glastonbury kitchen was erected as late as the days of Henry VIII. A short distance from the church at Fontevrault in France is another rare kitchen of earlier date still, probably the 12th century. It more closely resembles the Glastonbury one, and is octagonal, with circular apses projecting on either side. In the Vol. VII. (old series) of the A.A. Sketch-book and last volume of the R.I.B.A. *Transactions* some sketches of the building were given by Mr. Wm. A. Pite. In Parker's "Domestic Architecture" some drawings are given, and in J. M. Derick's Monograph of Stanton Harcourt, published by Parker in 1846, some plans will be found of the church. The domestic chapel and the chamber over it, and the tower containing three rooms one over the other, and each 13ft. square, remain in good repair. The uppermost one retains the name of Pope's study. Here Alexander Pope finished the fifth volume of Homer, 1718.

Witney, on the river Windrush (and once called Witaneye), was celebrated in Saxon times as the seat of the Witan who sat in council with the king. The church, of which we print a plan with this, is enriched by one of the finest spires in the county, which rises from a Late Transitional tower (1220-30) placed at the crossing, with eight bells in it. The spire lights are of exquisite design, and the angle turrets, contemporary with the Early English spire, are thought by some to resemble like work at Bayeux. At least ten altars can be shown to have existed in this church, and some ancient reredoses are still *in situ*. The building inside is exceedingly roomy, and may be described as of vast extent as compared with the size of the town. The nave arcade has no capitals, like the capless arcades at Coggs and Cropredy. We shall give an elevation of the former example next week, and at the same time a plan of St. Mary's at Witney. Elevations and details of the tower and spire will be found in *Transactions* of the R.I.B.A. for 1884, drawn by Mr. W. A. Pite in his report as Pugin student. The north porch is a work of various periods, from the 12th to the 15th century, and among other details of interest about it, besides the monk's room above the doorway, is a carving of the chase illustrative of the sports of Wychwood Forest. This church, which measures the same length across the transepts as it does from east of the chancel to the west end of the nave, was known as the "Cathedral of Wychwood." The stone of which the fabric is constructed is particularly hard, and came from Tainton, also on the Windrush, six hundred years ago. The sharp angles of the masonry show what a splendid weathering stone was used. Beneath the end of the north transept was a crypt, and immediately under the great window are two traceried recesses with recumbent figures in them about 12ft. from the floor of the transept. Remains of the undercroft springers and windows may still be seen in the walls. Five bishops have come from Witney, as may be seen from the list of the incumbents from the earliest times, which the present rector, the Rev. W. Foxley Norris, has compiled and hung up on vellum in the porch. Mr. G. E. Street restored the building. The market cross stands in the centre of the main street, and is rather picturesque, with its tiled roof. The building was put up about the close of Charles II.'s reign. The old "College" belonging to Corpus Christi College is recorded as having been erected as a refuge for the students during the great Plague which prevailed in this district. The deserted hall of the old Blanket-makers' Company was built in 1721. The manufacture of blankets, for which Witney had a name, has gone down—that is to say, the seat of this industry has been removed to the North of England. The old proverb says that "Witney was celebrated for four B's—Beauty, Bread, Beer, and Blankets." The Grammar School at the end of the avenue of trees is very French in feeling, like some of the old houses at Burford, and deserves more than a passing note.

Coggs Church, the last place down on Wednesday's programme, is situated on the outskirts of Witney, and stands adjoining the old Manor-house there, which contains some highly-interesting Early English windows on the front next the garden, with the original shutter fastenings (see Parker's "Domestic Architecture," Vol. I., p. 161, for illustrations). The house was rebuilt during the Elizabethan period, and has many more recent alterations about it. The property belonged to the Greys, of Rotherfield, and was the gift of Walter de Grey, Archbishop of York. At the west end of the church is an anglewise set turret or tower of singular character, of the Decorated period, with a timber-built upper stage plastered over, and the basement opening out into the north aisle by an archway. Outside is a staircase leading up to the ringing stage. We to-day give some details of this structure with the several floors, and other particulars, as well as a plan of the church and drawing of the altar tomb, with the recumbent female figure which stands between the chantry chapel and the chancel. It is supposed to be in memory of one of the De Greys. The piscina on the east respond of the arcade over the tomb is a most interesting piece of detail. The arcade itself is a very good piece of work. Last week we illustrated Burford Church (Thursday, for which day Asthall was included in the programme). We illustrate a view of the Church and Manor-house there to-day, and also the font from Burford. Next week we shall conclude our account of the excursion, accompanying our notes with several other illustrations.

The following illustrations of Oxford and neighbourhood have already appeared in our pages on the dates given:—Tutor's Lodgings, University College, H. Wilkinson Moore, architect, October 11, 1889; Keble College Chapel, Wm. Butterfield, architect, October 18, 1889; Brasenose College, New Front, T. G. Jackson, M.A., architect, May 11, 1888; Pusey Memorial House, H. W. Moore, architect, December 14, 1888; Trinity College, New Quad, and President's House, T. G. Jackson, M.A., architect, July 1, 1887; Lincoln College, additions to rector's lodgings, H. W. Moore, architect, October 8, 1886; Statue of John Hunter, University Museum, H. R. Pinker, July 2, 1886; Corpus Christi College, New Building, T. G. Jackson, M.A., architect, June 4, 1886; Brass Lectern, Wadham College, June 4, 1886; New Quad, Trinity College, T. G. Jackson, M.A., architect, September 25, 1885; A.A. Sketches in Oxfordshire, August 7, 14, 21, September 5, 1885; Indian Institute, Basil Champneys, architect, February 27, 1885; Oxford Military College, T. G. Jackson, M.A., architect, June 27, 1884; Oriel College, Extension of Choir and New Organ, T. G. Jackson, April 11, 1884; Exterior of Chancel, St. Peter's in the East, sketched by H. Mace, April 4, 1884; Christ Church, from the Meadow, sketched by W. H. Moore, January 4, 1884; Old Bit of Balliol College, W. H. Moore, November 3, 1882; St. John's District Church, Cowley, A.M. Mowbray, architect, October 27, 1882; New Buildings, Lincoln College, T. G. Jackson, M.A., architect, June 30, 1882; New Quad., Brasenose College, T. G. Jackson, M.A., architect, May 5, 1882; St. Edward's School, W. Wilkinson, architect, September 2, 1881; Prop. Quad., Magdalen College, B. Champneys, architect, July 1, 1881; Master's Lodge, University College, Bodley and Garner, architects, May 6, 1881; High School for Girls, T. G. Jackson, M.A., architect, April 29, 1881; New Buildings St. Mary Magdalen's College, Bodley and Garner, December 24, 1880; Keep and Entrance Gates to Brigade Depôt, E. Ingress Bell, architect, November 19, 1880; Boathouse and State Barge for University Boat Club, J. O. Scott, architect, July 16, 1880; State Barge for University Boat Club, J. O. Scott, March 19, 1880; High School for Boys, design by T. G. Jackson, February 13, 1880; High School for Boys, designs by T. G. Jackson and F. Codd, March 19, 1880; Old House in "The High," sketched by W. H. Moore, March 12, 1880; Post Office, E. G. Rivers, architect, August 22, 1879; Interior of Hall, Examination Schools, T. G. Jackson, June 27, 1879; New Belfry, Christ Church, Messrs. Bodley and Garner, June 27, 1879.

REGISTRATION OF SCOTCH PLUMBERS.

THE Congress in connection with the National Registration of Plumbers of Scotland concluded its proceedings at Edinburgh on Friday, Mr. A. M. Scott, Glasgow, presiding until noon, when Professor Crum Brown took the chair. A long discussion was caused by the question, "What are the best means for promoting technical classes for plumbers; and is a graduated scheme of trade education feasible or desirable?" Mr. W. R. E. Coles, London, described the graded syllabus of instruction in the principles and practice of plumbing prepared by the Worshipful Company of Plumbers, of which he is the secretary. It was generally agreed that some graded system similar to that described should be adopted, but that practical should be associated with theoretical instruction. The difficulty of reaching outlying districts, so as to give instruction to registered plumbers and their employés, was discussed, and it was suggested that peripatetic lecturers should be engaged to lecture and demonstrate in the small centres of population. Another and more important difficulty lay in the ability of masters wishing to benefit their apprentices to compel attendance on a course of lectures, but Mr. Coles stated that the Company had under consideration the drafting of a model indenture which should identify the systematic training of the apprentice with the conditions of his apprenticeship. The following resolution was adopted:—"We are agreed that graduated scheme of trade education is feasible and desirable, and this meeting recognises (1) that workshop practice should form part of any scheme of education; (2) we recommend the scheme of the Worshipful Company for the consideration of district councils; (3) we recommend that all apprentices should be indentured; and (4) that the masters should interest themselves in the education of their apprentices." A long discussion took place on the question whether it was desirable to have a central board in Scotland for the management of Scottish business. The feeling generally was against the suggestion, and a resolution was ultimately adopted to the effect that it was desirable to have a yearly conference in Scotland for the discussion of Scottish business. Glasgow was adopted as the meeting place for the next congress

CHIPS.

A contemporary announces the very serious illness of Mr. H. Lovegrove, of Budge-row, but we are glad to state that he is perfectly well. His son, Gilbert Henry, met with a serious accident recently, but is now nearly well. Hence the mistake.

At the Dean of Guild Court at Edinburgh, on Friday, a warrant was granted to Mr. David Watson Stevenson, R.S.A., to convert the Dean Free Church, now disused, into a studio for himself.

Mr. Thomas Guest, of Birmingham, has been selected from amongst several competitors as the architect of the proposed Wesleyan Church, Lichfield.

At the last meeting of the Dundee Water Commission, the proposal of a committee was adopted recommending that the salary of Mr. Watson, the engineer, should be increased from £500 to £600 per annum, and that he should get a gratuity of 250 guineas for his services in the preparations of Parliamentary plans for the proposed new waterworks.

The course of lectures at the Leeds School of Science and Technology, under the auspices of the Leeds branch of the National Association for the Registration of Plumbers, finished a few days ago when the students presented to the teacher (Mr. W. E. Bland) a dressing-case, "in recognition of their esteem for him, and their regret that he is removing to Newcastle-on-Tyne."

A two-manual organ, with eight stops, and in carved oak case, has been placed in the parish church of Madehurst, Sussex. It was built by Mr. Willis.

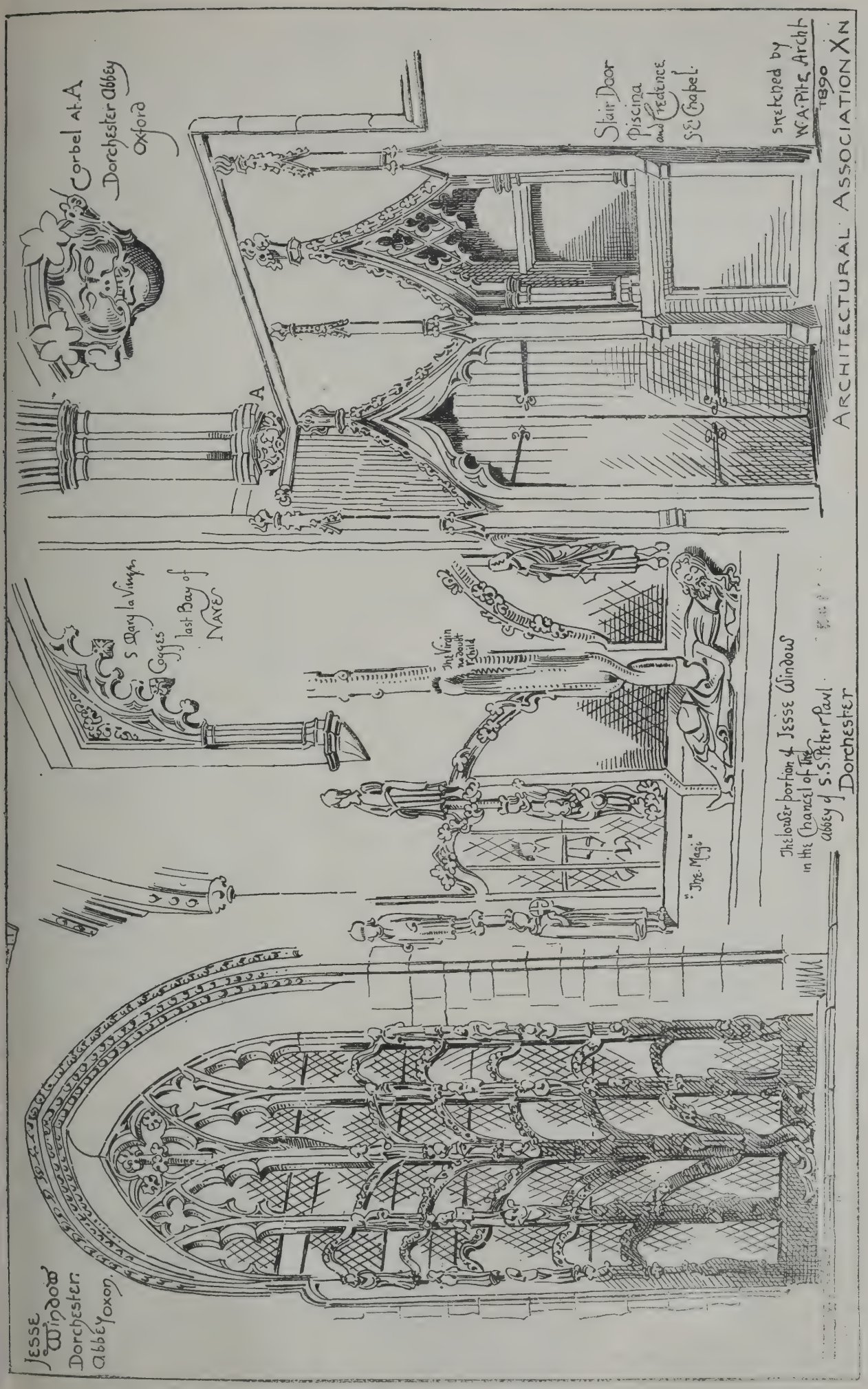
The Duke of Newcastle, who has given the site on which to erect the proposed St. Cuthbert's College at Worksop, will lay the foundation stone on the 4th September.

The other day, a portion of the stone finial of the south spire over the memorial gateway at Brighton Cemetery fell to the ground. The Cemetery Inspection Committee and the chairman of the burial board, Mr. A. Loader, architect, were speedily on the spot, and after closely examining the spire, and the adjoining one, they directed the further unsafe portions to be removed and lowered, so as to prevent risk. The rapid decay of the stone is assigned as the cause of the damage. The gateway was erected to mark the gift of the cemetery ground to the town by the Marquis of Bristol.

The Uxbridge rural sanitary authority have adopted a scheme by Mr. F. Beesley, of Westminster, for the drainage of Hayes, the estimated outlay being about £10,500.

A movement is on foot at Birkenhead having for its object the preservation of the ruins of St. Mary's Abbey in Priory-street in that town, and a fund being raised having as its first object the re-roofing of the Abbey Chapel of St. James.

A destructive fire occurred on Tuesday on the premises of Messrs. Stimpson and Co., builders, Lancelot-place, Brompton-road, S.W. A brick and timber building of two floors and covering an area of 100ft. by 50ft., used as workshops, engine-house and machinery-rooms, was burnt out, together with its contents. The neighbouring premises, including the Trevor Congregational Church, were much injured by fire, water, and cutting away.


Jesse Window Dorchester Abbey Oxon.
Corbel at A Dorchester Abbey Oxford
A
Stair Door Piscina and Credence S.E. Chapel
Sketched by W.A. Pite, Archt 1890
ARCHITECTURAL ASSOCIATION XN
S. Mary la Virgin Copies of last Bay of NAVE
The Virgin with Christ Child
"The Magi"
The lower portion of Jesse Windows in the Chancel of the Abbey of S.S. Peter & Paul Dorchester

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ILLUSTRATIONS.

THE ULSTER BANK, DUBLIN.—CONTEMPORARY BRITISH ARCHITECTS.—ARCHITECTURAL ASSOCIATION EXCURSION SKETCHES, 1890.—A BURNING GHAT, BENARES.—YO-MEI-MON GATE, NIKKO, JAPAN.

Our Illustrations.

THE ULSTER BANK, DUBLIN.

The Ulster Bank has its head-quarters at Belfast, and the new building illustrated is the principal of its branch offices in Dublin. It occupies a commanding site in the historic College Green facing the Bank of Ireland, which was formerly the Houses of Parliament. Trinity College façade (by Sir William Chambers) flanks one end of the green. At three striking corners of the convergent streets picturesque blocks of buildings have been erected by Mr. T. N. Deane in the last 25 years. Adjoining the new Ulster, the National Bank, a fine monumental building (by the late Sancton Wood), has been elevated, rejuvenated, balustraded, and trophy-crowned with success by Mr. Charles Geoghegan, architect. On the other side of the Ulster Bank Mr. Drew has designed a red-stone and terra-cotta poplin shop on a 20ft. frontage, which gives contrast and scale to the Ulster Bank's pretensions. An insurance office (by Bryce, of Edinburgh, 30 years ago) and the Hibernian Bank assist to make up a singularly diverse and picturesque grouping of buildings. The College Green of Dublin has grown in late years to be one of the most strikingly picturesque of city centres in the kingdom, and from many aspects it now presents pictures such as the late John O'Connor would have painted with effect, or Mr. Logsdaile might now rejoice in. The building stands upon a part of the well-identified site of the Danish Thingmote, where the Scandinavian Kings of Dublin dispensed justice, and later on served as the butts for the archery practice of the Anglo-Norman youths of English Dublin, in the Hoggen Green, as then known. Within a stone's throw stood, until this century, the long Steyne of Dublin, by which, as at Staines and Steyne in Scotland, the Danish piratical settlers were wont to mark their landing stations. The adjoining sites have been rich in many finds of golden ornaments and weapons of bronze, and the statue of William III., lately restored in grand style by the Corporation, is said to stand where a prehistoric cromlech at no distant period was. The new Ulster Bank was the result of a competition of six Dublin architects, of whom Mr. Thomas Drew, F.R.I.B.A., was the successful man. Ballinasloe marble has been used with an unsparing hand in the construction. Its effect seems worthy of the expense, and the carving (by Mr. Emery), if somewhat costly, is most effective in such a sharp-cut and fine material. The frontage is but 42ft., but the height of the building, nearly 100ft., gives it striking importance among the surroundings. The ventilation is by Messrs. Robert Boyle and Son, Limited.

CONTEMPORARY BRITISH ARCHITECTS.

(See description on p. 234.)

ARCHITECTURAL ASSOCIATION EXCURSION SKETCHES.

(A description of these sketches appears on page 209.)

COMPETITIONS.

Bromley.—In a limited competition for proposed United Methodist Free Church, Claremont-street, Bromley, in which five sets of drawings were received, the plans by Mr. V. Dunkerley, architect, of Burnley, were unanimously accepted for the above church. The chapel provides accommodation for about 800 people, and in the rear are minister's and trustee vestries. The front elevation is of a bold design, with a tower at one angle, and is designed in uniformity with the schools adjoining. The cost is estimated at £2,100.

Morley, near Leeds.—At Monday's meeting of the newly-appointed town council for Morley, a discussion took place on the report of the Town Hall committee, which recommended that the Council should advertise for designs for the erection of a Town Hall, and offer premiums of 100 guineas, 50 guineas, and 25 guineas for the three best designs; that for the information of competitors the sum of £15,000 be fixed as the maximum cost, to include all fixtures; and that it be a condition of the competition that each competitor shall, if required, produce a *bonâ fide* tender from an approved contractor to carry out the work for the amount specified in the estimate to accompany each design. The report was eventually adopted.

CHIPS.

It has been decided by the Carl Rosa Memorial Committee to place a marble bust of the late impresario in the Court Theatre, Liverpool, and Mr. William Merritt has already executed the model.

At the last meeting of the court of the Carpenters' Company, master and wardens as under were elected, viz.:—Mr. James Wells Browne, Mason's-hill, Bromley, master; Mr. Thomas Robertson, Park-street, Grosvenor-square; Mr. Benjamin Joseph Jacob, Lewisham High-road; and Mr. William Faith, Croxted-road, West Dulwich, wardens.

Messrs. J. R. Lee and Co. have just placed a stained-glass window in Moseley Parish Church. It consists of three lights, illustrating "The Finding of the Lost Piece of Money," "Christ Blessing the Little Children," and "The Good Samaritan."

Memorial stones were laid last week at Old Swindon of an extension of the Sunday Schools attached to Victoria-street Congregational Church. The new building will accommodate 250 extra children. Mr. W. H. Read is the architect, and Mr. J. Williams (who is the superintendent of the Sunday School) is the builder. The contract price is £500.

The foundation stones of the gasworks were formally laid at Blackwood, near Newport, Mon., on Thursday, the 7th inst. Mr. J. Monks, of Newport, is the contractor.

The Bishop Lightfoot Memorial Fund is to be applied to two objects. The one is the restoration of the Chapter House at Durham—a work on which the late Bishop had set his heart. The other is a statue for Durham Cathedral, for which Sir Edgar Boehm, R.A., has accepted the commission.

A careful survey of Westminster Abbey, taken under the direction of the Royal Commission, has made known the fact that there still remain 90 places within the edifice where interments may take place. By those members of the Commission who are opposed to anything in the form of an addition to the Abbey, this fact is used as an argument for letting things alone. It is pointed out that, taking the average of the last century, it will be a long time before these 90 places are filled up.

The Court of Appeal has permitted Earl Radnor to sell to the nation for £53,000 three of the pictures at Longford Castle, which have up to the present time been heirlooms in the family.

A Local Government Board inquiry was held at Swindon, before Col. Ducat, on Friday into an application from the New Swindon local board for sanction to borrow £4,500 for providing an infectious diseases hospital at Gorse Hill. Mr. H. J. Hamp, surveyor to the New Swindon local board, who prepared the plans, described the scheme, which was warmly opposed by residents in the suburb selected as a site, and also by the local board for Old Swindon.

New headquarters are being provided for the 1st Northumberland Artillery Volunteers in Barrack-road, Newcastle, on the site of the Garden Engine Works, which are being remodelled for the purpose. Mr. W. H. Knowles is the architect, Mr. L. Gaby, of Gosforth, being the contractor.

An organ, built at a cost of £200 by Messrs. Brewer and Co., of Truro, was opened at Grampound parish church on Wednesday week.

Engineering Notes.

School of Practical Engineering.—On Saturday afternoon Sir James Nicholas Douglass F.R.S., engineer-in-chief to the corporation of the Trinity House, distributed the certificates to the Crystal Palace Company's School of Practical Engineering, awarded for the summer term, 1890. The examiners for the term were Mr. A. R. Sennett and Mr. S. H. Cox, who reported that the Electrical section was a valuable addition to the work, in view of the great advances recently made in the practical applications of electrical science. The Colonial section appeared to be filling a want which was more than ever felt—the means of obtaining a practical knowledge of subjects and processes only to be met with in colonial occupations. The class work throughout the term had been very satisfactory, and the drawing specimens exhibited the result of careful training and a thorough appreciation of what was taught on the part of the students.

LEGAL INTELLIGENCE.

Can Workmen Recover for Time Lost in Waiting for Pay?—A deputation of plasterers who said they had been at work on a building for sub-contractors in Victoria-street, Westminster asked advice from Sir John Bridge on Saturday as to whether they could claim compensation for being detained two hours and a half after the ordinary time of leaving off work before they were paid. The spokesman said that the custom of the trade was to cease work at 12 on Saturdays, and the men resented being kept till half-past 2 without their money. They demanded to be paid as if they were kept employed on the building. Sir John Bridge: You cannot do that. Any cause of action would be for work and labour done, and you do no work while waiting to be paid. Applicant: No, because we are not allowed to. Twenty-two of us come plain, and as it is not the first time, on Friday the majority of us signed a paper saying we would not stand it any longer. The consequence is that 10 or 15 of the lot "got stopped." Sir John Bridge told the men that a tradesman could not charge any more for any article if the customer kept him waiting for his money, unless, of course, long credit were reckoned in making the original charge. The workmen were in the same position. He did not see how they could charge for waiting to be paid. Applicant: We considered that the custom of the trade has established the law. The custom is to knock off at mid-day, and that does not mean waiting about for two hours later. Sir John Bridge: You will be quite right if you make a bargain with your master. Then you will have the law on your side clearly, and you will be able to recover. The deputation thanked Sir John Bridge and withdrew.

What is a Street?—Mr. Bros, at the North London Police-court on Wednesday, decided three separate cases which the London County Council had brought against Mr. James Miller. Defendant had erected, without sanction, six houses in a thoroughfare which he called Miller's-avenue, and had successfully resisted an action brought by the County Council to declare the road public. Defendant has since erected some twenty other houses in the same roadway, and he was summoned for making a street for foot-traffic without sanction for its not communicating with two streets; and for its not being open at both ends from the ground upwards—one end being an archway. Mr. Bros dismissed the summons in each case with costs, holding that the thoroughfare was not a street within the meaning of the Act 45 Vic., following the "Metropolitan Board of Works *v.* Nathan," and declining to state a case.

On Saturday Mr. George Dixon, M.P., laid the memorial stone in connection with the Burlington Hall, High-street, Aston New Town, Birmingham, the future head-quarters of the Burlington-street Early-morning School and agencies. The new premises were originally known as the Beaconsfield Buildings, but these are so being altered as to provide a hall seating 300 persons, a set of eight classrooms, public coffee-bar, a members' private reading and refreshment room, a bagatelle-room, committee rooms, library, storerooms, and lavatories. The alterations are being carried out, at a cost of £5,000, by Messrs. McKenzie and Lane, under the supervision of Mr. Thomas Guest, architect.

The Fine Arts Palace at the Champ de Mars has just been leased for an indefinite term of years by the Paris Municipality to the Union Centrale des Arts Decoratifs for the installation of the Decorative Arts Exhibition. The annual rent is fixed at 30,000 francs. This Art Union will let a portion of the building to M. Meissonier's Artists' Society for the holding of their annual Salon.

WAYSIDE NOTES.

IT is commonly supposed that all matters relating to the fine arts are, in France, managed in a vastly superior manner to that which is in vogue in this country, and that State regulations and State officialism across the Channel must ever be held up as models, to be kept constantly in view by those persons who would reform and reorganise our own Science and Art Department. That this is a vain imagining may be learned from the text of the official report on the budget of the Fine Arts, which was distributed to the Deputies just before the closing of last session of the French Parliament. Defects, long widely known, in the French Art Department, are given prominence in this report of M. Antonin Proust; but the most curious portions of the document relate to the conservation of objects of art in the museums. The state of things shows a woful want of accord between the Department of Civil Buildings and that of the Fine Arts. Pictures come under the jurisdiction of the Fine Arts Department; but the hooks, rods, &c., by which they are hung for exhibition belong to the Civil Buildings Department. Statues are under the care of the Fine Arts Department, the pedestals upon which they are placed are supervised by the Civil Buildings people, and conflicts about such matters and about the decoration of the buildings are constantly arising. Such is the condition of affairs in a land where they are not only supposed, as a general rule, to manage things better, but one to which enlightened individuals will point as an example of what might be done to improve the management of art matters in England!

M. Proust suggests in his report that the administration of the Fine Arts Department would be better if divided into services. First, the teaching of art; secondly, the preservation of art; and, thirdly, the encouragement to production. It is certainly very evident, in view of the petty squabbles so constantly arising, that reform is only to be brought about by a thorough reorganisation of the Department. The absurdity of placing a statue and its pedestal, and a picture and its support, under two distinct jurisdictions of equal authority, must be manifest to all. It has been manifest enough to many thinking Frenchmen for a long time. The principle of this divided authority over what are, to all practical intents and purposes, one and the same thing, is so unsound that it is a marvel that it should have endured so long. Perhaps, in the face of M. Proust's report, some reform will be brought about, and the statue and its pedestal, and the picture and its support be placed under the same jurisdiction. There may be many other details in the organisation of the Fine Arts Department that require remodelling; but this discord between the Fine Arts and the Department of Public Buildings stands out from every other shortcoming, and if it continues is calculated to become a source of world-wide ridicule. By the side of the French method the management of our own Science and Art Department is princely. Croak as people may as to the defects in the latter, if they have read the briefest account of M. Proust's report on the budget of the French Fine Arts, they cannot in future point to the former as an example of all that is excellent.

The proprietors of the new Thames subway, and the railway running through it, now take the title of the City and South London Railway Company. Since their first organisation under their original title they have obtained powers for extending the line to Clapham—how much farther they will extend in the future will remain to be seen; but we do know how small concerns, like the original Metropolitan Railway, have crept gradually away from the Metropolis, until the line becomes of quite respectable length. According to statements of Mr. C. G. Mott, who presided at the half-yearly meeting of the C.S.L.Ry.Co., the Company have had many disappointments during the carrying out of their undertaking. What these disappointments relate to was not stated; but by a process of reckoning one concludes that they must have reference to the methods tried for the proposed electrical propulsion. The formation of the tunnels, Mr. Mott said, has led to no mishap; even the work through the water-bearing gravel at Stockwell having been conducted with exceptional success. The stations below are all practically finished, and those above nearly so; the signalling arrangements throughout the tunnels are approaching completion; and the engines for the lift machinery, and those for driving the dynamos are put down. Some delay, it is true, has occurred in connection with the lifts themselves; but they are now making progress towards completion. Thus it would appear that the frequent disappointments, which made Mr. Mott loth to predict the day of opening, must have been occasioned by some little want of caution as to the nature of the electrical arrangements made. Electrical locomotion being yet in its infancy, however, one can scarcely blame the engineers of the City and South London Railway for any delay occasioned by trials of different systems.

Something new in the way of problems in planning is a considerable relief to the architectural world. The County Council Municipal Lodging-House, or Model "Doss-house," as I have seen it styled, will provide a novelty in the way of competitions. It opens the way rather to hard-headed common-sense than fanciful designing. Economy with healthfulness in arrangements will be every competitor's first care. The competition itself promises to be carried through in a satisfactory manner. Inaugurated by the London County Council, and to be judged by two eminent and respected architects, one may safely conclude that it will be free of all those nauseating pettinesses that disgust one in the average competition. And if in the future much work is to be done of a similar description, it will mean something more than £100, or a commission of 5 per cent. on the cost of the proposed building, to the architect placed first by the decision of Mr. Ewan Christian and Mr. Thomas Blashill. More than this, the successful competitor will feel that he has done something towards the solution of one of the many pressing social problems of the day. The housing of single persons who, not always from their own causing, remain of a low degree, in plain healthy buildings, is a good work, second only to that of providing cheap and wholesome habitations for families. Much has been accomplished in the latter direction, and now thought and study are well employed in planning for another section of the body social.

Ninety feet and two stories in the roof is to be the maximum height of buildings in the Metropolis. The Bill containing this restriction—the London County Council Bill—passed through the House of Lords on Monday evening last. At the third reading in the Upper House, Lord Stanley of Alderley moved that the height be restricted to 70ft. instead of 90ft.; but as previous objectors found, the 70ft. maximum originally proposed by the County Council did not prove generally acceptable. How the result of this attempt to prevent "sky-scraping" will be received by the architectural profession, will depend upon individual circumstances. The architect of a proposed lofty block of buildings running close up to 100ft., will consider himself in luck, in that the limit of 70ft. has not been imposed; while the designer of modest little houses will think that the 90ft. is unnecessary and excessive, and that in losing the 70ft. the County Council have failed to do much to effectively stop the tall building mania. For my own part I am inclined to view matters in the latter aspect, although nowadays it is something to be able to stay the growth of sheer walls at 90ft. And it certainly seems a defect in the provisions of the Bill that some attention has not been paid to the very obvious fact that a building of 90ft. may be tolerable in one position, where it would be overbearing in another.

The new Police Office buildings yet continue to puzzle the public, and members of Parliament are still agape at them. On Tuesday evening, on a vote of supply for the Home Department, Mr. Matthews came in for more baiting at the hands of members who consider the incomprehensible nature of the design of the Embankment building to be a personal insult to themselves. Mr. Cavendish-Bentinck led the attack, asserting, among other things, that the building had been viewed with great disfavour by some authorities in the country. Who the "authorities" were Mr. Cavendish-Bentinck did not state, which is to be regretted, since the assertion makes an architect very curious. It is pretty certain that they were not authorities on architectural questions, whatever else may have been their strong point. In reply, Mr. Matthews stated that he had taken the advice of high artistic authorities in London—persons who were at the head of art in this country. He asked them the name of the best architect to employ, and commissioned the gentleman thus named to put up the best building he could for the money. The cost of the building has been £96,000. As I have said before, the building appeals to the cultivated architect, and in itself forms a great addition to London architecture. If there is one thing to be said about it, it is that it does not harmonise generally with the Westminster group; but where was there ever a new building that did harmonise with its surroundings, if it had any true and bold character of its own? And because it does not harmonise with its immediate surroundings it is not to be looked upon as an intruder, if it be in itself excellent. "Dr. Tanner," said the *Times* Parliamentary report on Wednesday morning, "expressed his contempt for the new Scotland-yard buildings, characterising them as a *vulgar interruption* to the Embankment." The reason of this peculiar expression of opinion will, however, be patent to all who followed the course of events in Parliament on Tuesday evening.

GOTH.

CHIPS.

Alderman James George Naylor, J.P., builder and contractor, of Rochester, died on Friday last at the age of 70 years.

At the last meeting of the Aston Manor Local Board the tender of Mr. Merton Hughes, builder, Birmingham, was accepted for the erection of fire-engine house, drying tower, and new stabling, in accordance with plans, sections, &c., prepared by Mr. W. Augustus Davies, Assoc.M.Inst.C.E., engineer and surveyor to the board. The board have also decided to erect public baths for the district, including first and second class swimming and private baths, and they have instructed Mr. W. Augustus Davies, their engineer and surveyor, to prepare plans, sections, specification, and estimates of the proposed baths for presentation to their next meeting to enable the work to be commenced as soon as possible.

At Paisley Dean of Guild Court, on Friday, plans of a new Free Church, to be erected in Paisley, were passed. The site is at the corner of Glasgow-road and Greenlaw Drive, and the building will have accommodation for 720, besides a hall for 200. The style will be Gothic. The cost will be about £4,500.

The list of receiving orders in bankruptcy announced in Tuesday's *Gazette* contains the name of Thomas White Collard, Herne Bay, clerk and surveyor to the Herne Bay local board.

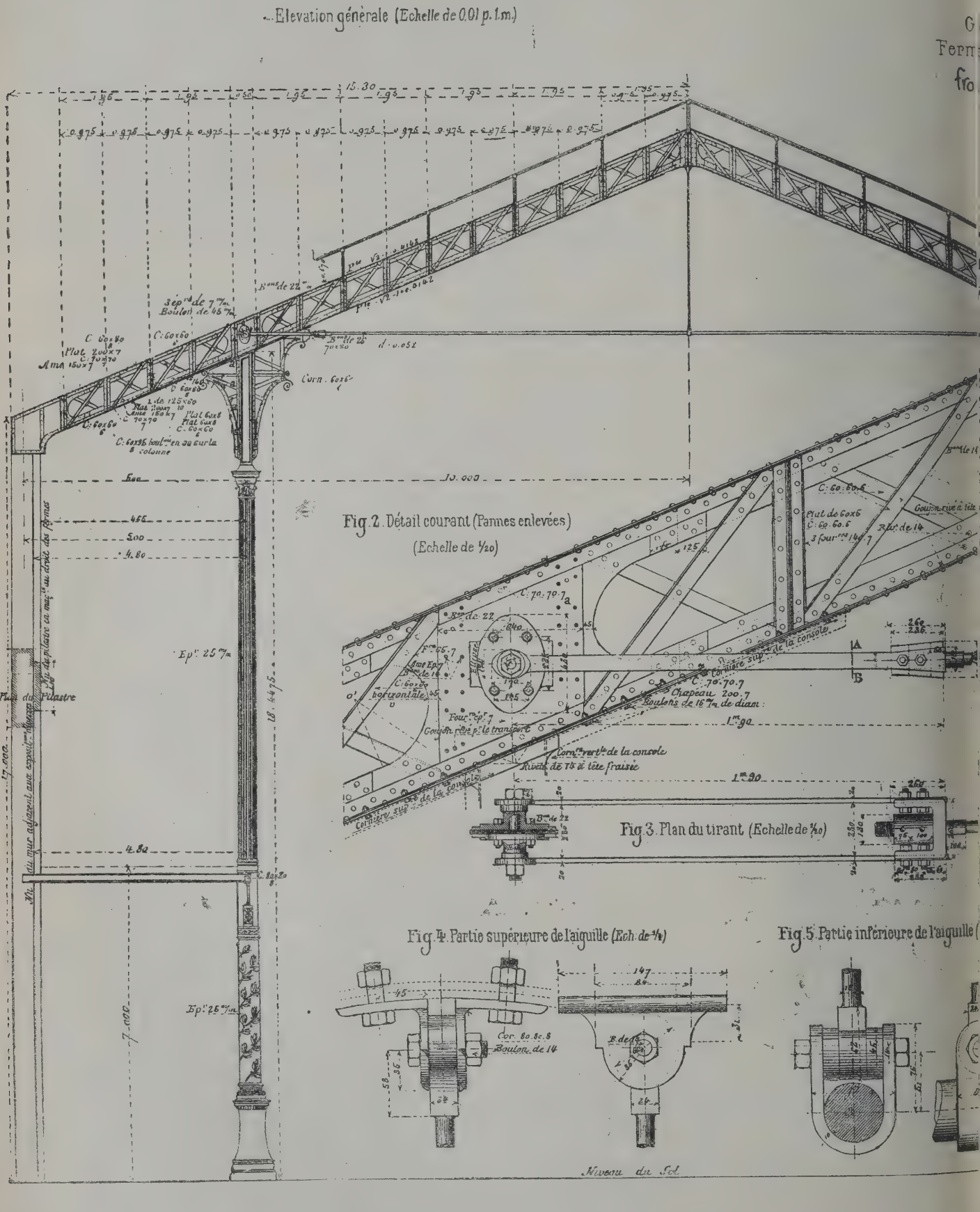
The annual congress of the Cambrian Archæological Association will be opened at Holywell, Flintshire, on Monday next, and will be continued till Thursday.

At a meeting of the Yeovil town council, held on Monday, Mr. Armytage, assistant surveyor for the borough of Preston, was elected borough surveyor and manager of the waterworks. The salary is £270 a year, and the retiring surveyor will act as consulting surveyor for three years.

On Monday, August 4th, memorial stones were laid of the new entrance to the Wesleyan Chapel, Burbage, Leicestershire. Mr. Thomas Guest, of Birmingham, is the architect.

A special meeting of the Worthing Local Board was held last week to consider what steps should be taken in reference to the disappearance of the assistant clerk. A letter from the missing clerk was read, admitting serious defalcations, and asserting that these were increased and ultimately came to light in consequence of the refusal of the late surveyor to the local board, Mr. W. Horne, to meet or renew the writer's bills. Another letter was read from a Mrs. Penrose, mother of one of Horne's pupils, asking whether the youth ought to be continued in the Board's service, although Horne had filed his petition in bankruptcy and been dismissed. Some members declared that the Board had been to blame in allowing Horne to receive premiums of £30 to £50, and it was decided to refer the matter to a committee, with instructions to keep the youths on, if they worked satisfactorily. Mr. R. S. Hyde was appointed surveyor *pro tem.*

Four windows have just been placed in the parish church of Newton Toney, in Wiltshire, by Messrs. Heaton, Butler, and Bayne. The subjects are Faith, Hope, Charity, and Fortitude. Faith is represented by the healing of the Centurion's servant, Hope by the appearance of the angel to the two Marys at the sepulchre on the morning of the Resurrection, Charity by the Good Samaritan, and Fortitude by St. Paul before King Agrippa.


Elevation générale (Echelle de 0.01 p. 1 m.)
15.30
10.000
17.000
7.000
4.80
Niveau du Sol
Fig. 2. Détail courant (Pannes enlevées)
(Echelle de 1/20)
Fig. 3. Plan du tirant (Echelle de 1/10)
Fig. 4. Partie supérieure de l'aiguille (Ech. de 1/4)
Fig. 5. Partie inférieure de l'aiguille

ètres.

e Civil" (N°65)

Fig 6. Détail d'une attache de panne (Échelle de 1/10).

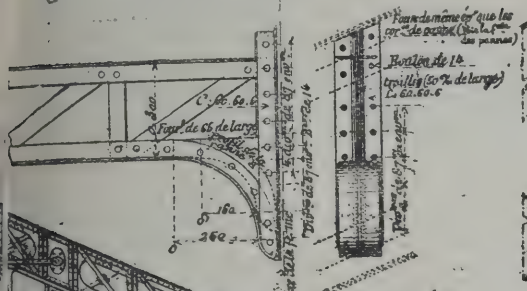


Fig 7. Détail de la partie supérieure (Échelle de 1/10)

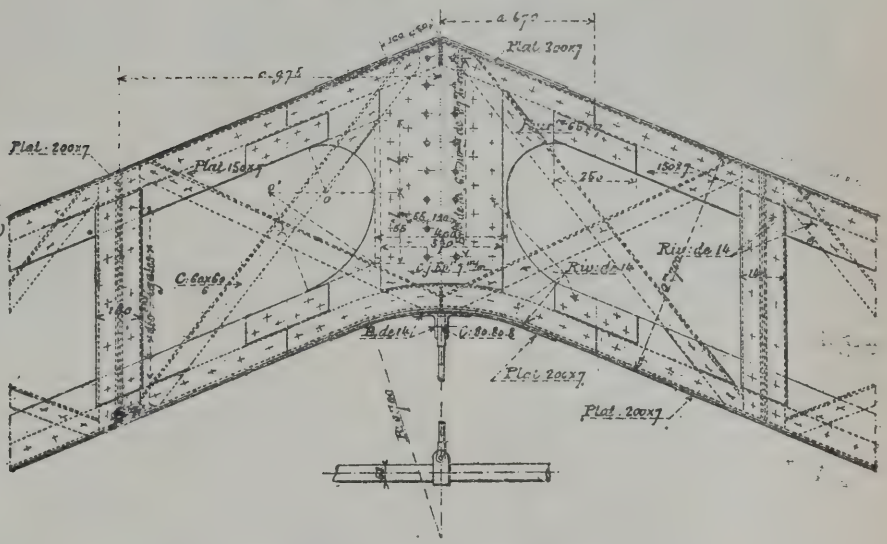


Fig 8. Travée de 14m00 (Pannes avec lanterneau) (Échelle de 1/10)

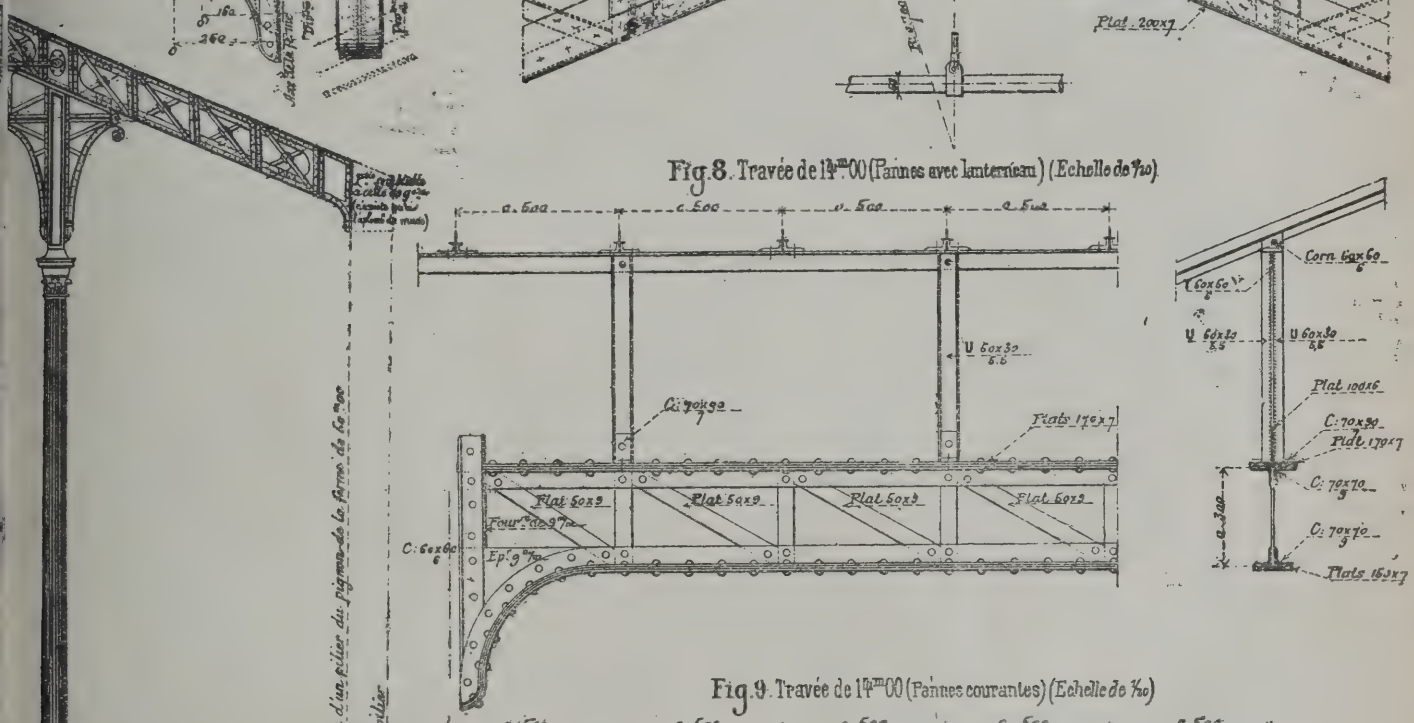


Fig 9. Travée de 14m00 (Pannes courantes) (Échelle de 1/10)

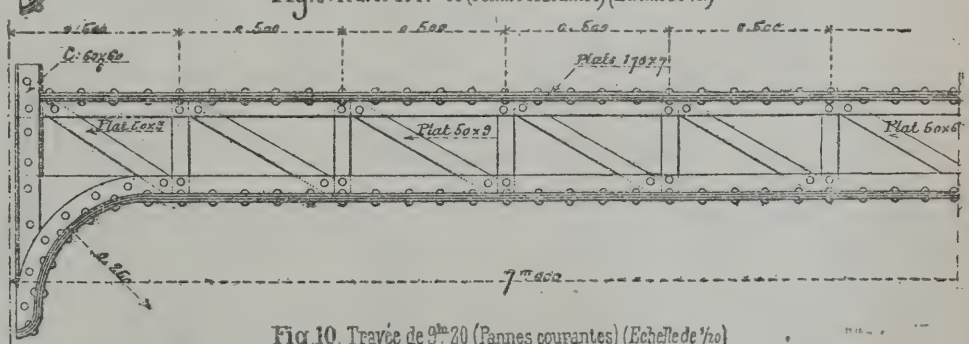
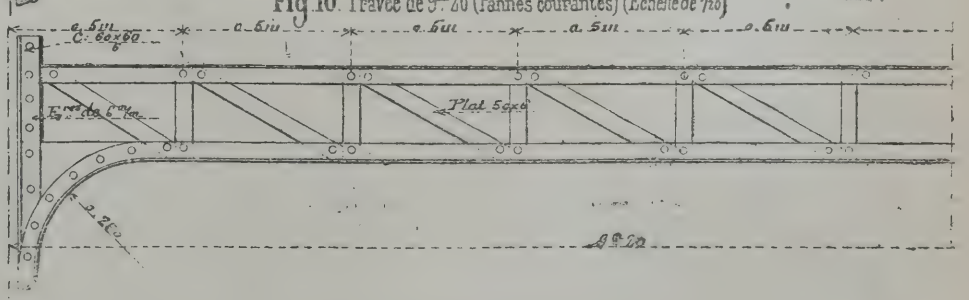


Fig 10. Travée de 9m20 (Pannes courantes) (Échelle de 1/10)



CONTEMPORARY BRITISH ARCHITECTS.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

THIS is the nineteenth double-page group of architects' portraits given in our pages this year. The first photograph on the sheet is that of—

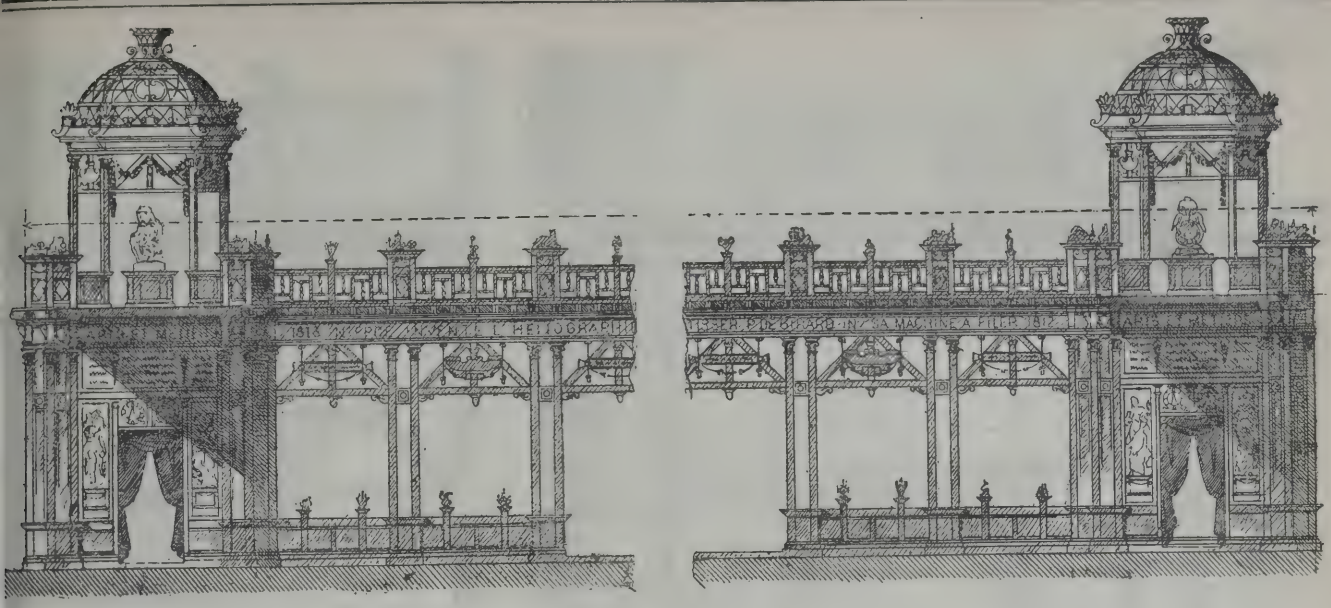
Mr. Malcolm Stark, Jun., I.A., who was trained in the office of Mr. Wm. N. Tait, I.A., Glasgow. He is about 36 years of age, and has been about 14 years in practice. His principal works of a domestic character are: Cuilvona, Loch Ard, Perthshire, for Mr. Patrick G. Morison; Park House, Dumbartonshire; Ferriemill, Stirlingshire; Middlecroft, Dumbartonshire; additions to the Knowe, Port Glasgow, for Mr. Joseph Russell, shipbuilder, and about thirty villa residences distributed in the suburbs of Glasgow; Kelvinside, Pollokshields, &c. His ecclesiastical works include Gilfillan Memorial Church, Dundee; Blochairn Free Church, Glasgow; Alexandria Wesleyan Methodist Church; Rockville United Presbyterian Church, Glasgow; Dennistown Evangelical Union Church, Glasgow, and additions to several Presbyterian churches in Glasgow and the West of Scotland. He has erected mission halls in Arbroath, Leith, Cockenzie, Haddingtonshire, Whiflett, Kirkintilloch, Coatbridge, and Blantyre. Besides factory buildings in Rutherglen, and a Board School in Kirkintilloch, Mr. Stark has erected a considerable amount of property of a miscellaneous character distributed in Glasgow, Coatbridge, Kirkintilloch, Kilsyth, Aberfoyle, Dumbarton, Barrhead, Leeds, &c. Mr. Stark was one of the premiated competitors in conjunction with Mr. James Lindsay, of Glasgow, for the new War and Admiralty Offices. He also obtained the 2nd premium in the competition for the proposed Edinburgh Municipal Buildings on the adjudication of Mr. Waterhouse, and the 1st premium in the competition for the Gilfillan Memorial, Dundee, on the adjudication of Mr. G. W. Browne, of Edinburgh. Recently Mr. Stark's design for the new lunatic asylum for Hawkhead, Gasgow, was placed first in a competition confined to Glasgow architects by the referee, Mr. Sydney Mitchell, of Edinburgh, and Mr. Stark has since been appointed by the Govan District Board of Lunacy to carry out the work. Mr. Stark is a member of council of the Glasgow Institute of Architects. About two months ago Mr. Stark assumed as a partner Mr. Frederic Rowntree, of Scarborough, and since then the firm have been engaged on several commissions in England, including the erection of some important buildings for Mr. J. E. Ellis, M.P. for Nottingham. Mr. Stark's photograph was taken by Messrs. Brinkley and Stevenson, of Sauchiehall-street, Glasgow.

The late Mr. John Carrick, who died on the 2nd May, was City Architect of Glasgow and Master of Works. He was also a Fellow of the Royal Institute of British Architects, a Member of the Institute of Civil Engineers, and a Member of the Glasgow Institute of Architects. He was a pupil of the late Mr. John Bryce, of Glasgow, and on completing his apprenticeship he was for some time an assistant with the late Mr. Herbertson, of Glasgow. He then went to Messrs. Hurst and Moffat, of Doncaster, and on returning to Glasgow from Doncaster he became an assistant with his old employer, Mr. Bryce, and subsequently entered into partnership with Mr. Brown, under the firm of "Brown and Carrick." Mr. Brown having succeeded to an estate near Edinburgh, the partnership only lasted for a few years, during which time, however, such works as Renfield United Presbyterian Church, Renfield-street; Free Church, Eglinton-street; Evangelical Union Church, Montrose-street; Corn Exchange, Hope-street; and various business premises throughout the City were carried out by them. Shortly after the termination of partnership Mr. Carrick entered the service of the Corporation, having succeeded the late Mr. Hume in the office then known as Superintendent of Streets and Pavements, and about the same time he was appointed by the Police Commissioners architect to the Prison Board of Lanarkshire. Having been City Architect and Master of Works for the long period of forty-six years, the works carried out by him were both numerous and varied. Among the more important buildings executed from his designs were the following, viz.:—Western, Eastern, additions to Central, Northern (now in course of building), Saint Rollox and Marine Police-offices; Springburn, Yates-street, Camperdown-street, Dalmarnock-road, and South Wellington-street Police-stations; fire-stations in Soho-street, St. George's-road, Warwick-street, Cranston-street, Saint Rollox, and College-street, with its predecessor in Bell-street; Dead-Meat Market, Moore-street; entrance to Cattle Market, Graham-square; Old-Clothes Market, Greendyke-street; Dog and Bird Market, Jail-square; Bazaar and new entrance to City Hall, Candleriggs-street; additions to Museum, Kelvingrove Park; Greenhead, Townhead, Northwoodside, Cranston-hill, and Southside public baths and washhouses; Drygate, Greendyke-street, Portugal-street, Clyde-street, North Woodside-road, and Hyde Park-street model lodging-houses; fever and small-pox hospitals, Belvidere, and sanitary washing-house; artisans' dwellings (erected, and in course of erection), Saltmarket-street; cleansing department premises, Parliamentary-road, and gunpowder magazine. The portrait is from a photograph by Messrs. Ralston and Sons, 311, Byars-road, Hillhead, Glasgow.

Mr. Andrew Heiton, F.R.I.B.A., served his apprenticeship with his father, who was the city architect of Perth, and who had an extensive practice in the county and district. Among his executed works are:—Houses in Perthshire: Loyal House, for the Hon. W. Ogilvie; Dunalastair, for General Sir John Macdonald, K.C.B.; Craighall; Newmilne; Belvidere; Taybank; Hopepark; Gorthy; Bonskied; Newfargie, Glenfarg; Aldernaig; Cordney; Port an Eilean; Dundarrach; Hamilton House; Drumearn; Orchill, Kippen, Dunning; Castle Keillour; Dunearn; Glenbruach, Craigclowan; Lethendy Tower; Dalguise; Druidsmere; Drumfork; Garth, for Sir Donald Currie, K.C.M.G., M.P.; Kilbryde Castle, Dunblane, for Sir James Campbell, Bart. Houses in Forfarshire: Fernhall, for Mr. John Sharp; Forthill; Beechwood; the Gunge; Ravenscraig; Castleroy, for Mr. Geo. Gilroy, all in Broughty Ferry; Airlie Mount; Balloch; Craigisla, at Alyth: Hallyburton House, Coupar Angus, for Mr. Graham Menzies. Houses in Fifeshire: Seggie; Gaurdbridge; Westwood, Newport, for Mr. Harry Walker; Kinbrae, Newport, for Mr. John Leng, M.P.; Cameron Bridge, for Mr. H. V. Haig. Boleside and Brunswick Hill in Roxburghshire; Vogrie House, Gorebridge, for Colonel Dewar; Glencarron House, Denny; Giffen Castle, Ayrshire, for Mr. H. G. Patrick; Westwood Grange, Headingly, Leeds, for Mr. A. T. Lawson; shooting lodges of Glenmore and Lyn Magilbert, near Aviemore, and additions to Enville Hall, Stourbridge, for the Earl of Stamford and Warrington. Station buildings for the Scottish Central Railway Company, Scottish North-Eastern Railway Company, and the East of Fife Railway Company; and in 1863 the village of Cowlairs (workmen's dwellings) for the Edinburgh and Glasgow Railway Company; Union Bank of Scotland and Savings Bank, Perth; Victoria Buildings, Tay-street, Perth. Re-construction and new infirmary wings to James Murray's Royal Asylum, Perth; Poor's House, Perth; Scones Lethandy farm buildings, Perth; Kinnoull School and Caledonian-road School, the latter in course of erection; Dreadnought Hotel, Callander; Perth Station Hotel; Municipal Buildings, Perth; Athole Hydropathic Establishment, Pitlochry; Presbyterian Church, Rutland-square, Dublin; Rathgar Church, Dublin; Presbyterian Church, Kingston; Free Church, Broughty Ferry; St. Andrew's Church, Perth; Newtyle Parish Church, Forfarshire; Kinfauns Parish Church, R. C. chapel, Crieff; St. Mary's Monastery and Church, Kinnoull, Perth; restoration of St. John's Church, Perth. Mr. Heiton has been for many years architect to the City of Perth. The photograph reproduced is by Mr. Marshall Wane, Edinburgh.

Mr. George Soudon Bridgman, M.S.A., of Torquay and Paignton, was born in Torquay in 1839, was educated at Chudleigh, and articled to Mr. J. T. Harvey, architect to the Manor of Tormohun, and on the expiration thereof he left for London, and was engaged by the late Mr. Thomas Burton, of the City. He returned to Torquay, and commenced practice in the year 1865. Among his early works was the erection of a private residence for the Rev. T. G. Hall, of King's College, and the Torquay Hotel, Torquay. In the year 1866 he laid out the land between the old village of Paignton and the sea shore, and superintended the erection of the sea walls, land drainage, and prepared Parliamentary plans for the Paignton waterworks. His practice has been principally confined to Torquay, Paignton, and Dawlish; but his buildings have been erected about Devonshire, and comprise private dwellings, some streets of houses, and business premises. Oldway Mansion, for the late Mr. J. M. Singer, was erected from his plans at a cost of over £25,000, with stabling and conservatories to same at a cost of £12,000; also farm buildings for the Right Honourable Lord Clifford and other landowners in Devon and Somerset. He has designed about a dozen chapels, halls, &c., a similar number of church and chapel restorations, eight new Sunday school buildings, also eight college and educational buildings, board schools, &c. The most recent of his public buildings are new wing to the Imperial Hotel, Torquay; the Town Hall, Public Buildings and Art Schools, St. Mary Church; Market Hall, Public Hall, and large Board Schools, Brixham; Devon and Cornwall Banking premises, new Public Hall, drill shed, and new hospital, Paignton; Masonic Hall, Brixham; Masonic Hall, Dawlish; also new Devon and Cornwall Banking premises, Dawlish, with other works now in hand. He has been assisted for a time by his son-in-law, Mr. S. G. Goss, A.R.I.B.A., who has recently joined his brother, Mr. H. H. Bridgman, F.R.I.B.A., of 42, Poultry, E.C., as partner. Mr. G. S. Bridgman has been a member of the Torquay Local Board of Health, and for more than eight years a member of the Paignton Board, is now president of the Paignton Liberal Association, and Vice-President of the Society of Architects. His photograph is by Mr. J. Rawlings, of Paignton.

Mr. Thomas Jackson, whose portrait comes next, has been, and is, practising in Belfast for close on sixty years. He was articled to the late Mr. George Dymond, of Bristol, and at the conclusion of his pupilage he removed to his native country, Ireland, where during his long practice, he has carried out quite a number of buildings, a list of some of which we may enumerate. All are in Belfast, unless otherwise stated. Savings Bank, Waterford; Corn Exchange; Museum; music hall; Scottish Amicable Assurance Company's offices; St. Malachy's Chapel; "Friends" meeting house; "Friends" meeting house, Lisburn; Unitarian meeting house, Ballymena; Reformed Presbyterian Church, College-square North; Presbyterian Church, Rosemary-street; nineteen new branch banks, for the Ulster Banking Company, besides additions and alterations to about as many more; Fountain-street hall; Braidwater Spinning Mills, Ballymena; Barn Flax Spinning Mills, Carrickfergus; Gunning and Campbell's Mills, Falls-road; Chermside and Co. (now Messrs. J. and T. M. Greeves) mill, Falls-road; Flax Spinning Mill, for the late Mr. Bosey; Flax Spinning Mill, Cupar-street, for Messrs. J. and T. M. Greeves; Flax Spinning Mill, Glenbank, for Mr. Emerson; Flax Spinning Mill, York-street, for Mr. Andrew Mulholland; weaving factory, for Messrs. Kennedy; large bacon curing establishment, for Mr. J. Strangman Richardson, at Waterford; large bacon curing establishment, for Messrs. Sinclair; residences for Mr. Demseath, Ballymena, and for Mr. Patrick and Mr. Young at same place; Mr. Green, Tullylagan, co. Tyrone; Mr. Lloyd, Tamnamore, co. Tyrone; Mr. Joy, at Craigovad, co. Down; Mr. Gray, at Graymount, co. Antrim; Sir David Taylor, Bertha, Belfast; Mr. John Arnott Taylor, Drum House, Belfast; Mr. Penrose, Houghton, Cork; Mr. Wm. Peet, Rockville, Waterford; Mr. John Owden, Seapark; Mr. Thomas Greer, Seapark; Mr. Boomer, Seaview; Major Rowan, Merville; Mr. Robert Grimshaw, Longwood; Sir Thos. McClure, Bart., Glenmachan Tower; Mr. Jonathan Cordukes, Glenebor; late Sir Wm. Ewart, Bart., Glenmachan; Sir Wm. Quartus Ewart, Bart., Schomberg; Mr. Wilson, Lurgan; Mr. John Cuppage, Lurgan; Mr. Henry Cuppage, Lurgan; Mr. Fras. Watson, Lakeview, Lurgan; Mr. Hugh Watson, Stramore, Portadown; Mr. Forster Green, Derryvolgie; Mr. John Greeves, Lismachan; Mr. Thomas M. Greeves, Tweskard; Mr. Joshua Richardson, Old Forge; Mr. Joshua Pim, Lisnagurvey, Lisburn; Mr. James Richardson, Lissue, Lisburn; Mr. Joseph Richardson, Springfield, Lisburn; Mr. John Dunville, Richmond, Belfast. Warehouses for Messrs. Barnett, Messrs. Arnott and Co., Forster, Green and Co., Grattan and Co., and shops for Messrs. Gunning and Co., Messrs. Anderson and McAuley, and



s. Bottomley and Co.; the Royal Elms, ıont, Royal Terrace, Ashley-place. The graph is by Messrs. Mavius and Vivash, of st.

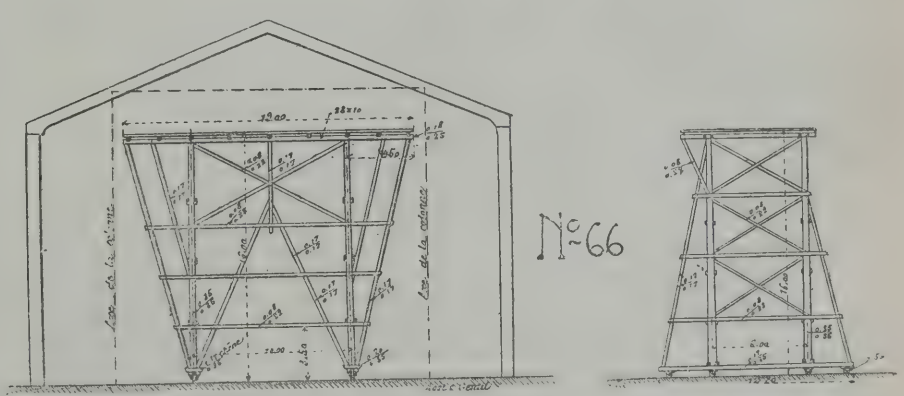
e last portrait on the plate is that of Mr. axon Snell, who has given us this list of o buildings executed or about to be executed his designs:—New Hospitals: St. Olave's n, St. George's Union, Holborn Union, St. lebone, Kensington (as consulting archi- nly), Mitcham Schools Infirmary, Holborn n. St. Marylebone Workhouse: Temporary l wards, male and female infirm wards, pro- nary wards, master's house and adminis- e offices, permanent casual wards, cellular m, able-bodied workhouse, engine-house, en, chapel, and other administrative offices. uke's Workhouse: Male and female infirm s, master's house and administrative offices, en, laundry, and engine-house. Hendon n Workhouse: New able-bodied wards, &c. orn Workhouse: Additional offices. Clerken- Workhouse: Dispensary and various addi- l offices. Rotherhithe Workhouse: Casual s, cellular system. St. George's Union, over-square: Able-bodied workhouse, Ful- road; additions to male and female infirm s, master's house, engine-house, and large ions to Administrative Offices; chapel; re- ng house for able-bodied sick lunatics, &c., Vallis's-yard, Pimlico. Kensington Work- e (as consulting architect only): Able- d wards, clerks' offices, and additions to nistrative offices. New Dispensaries: St. lebone at East-street, St. Marylebone at e Union-place. Old Premises converted Dispensaries: St. George's Union at Buck- am Palace-road, Holborn Union at Farring- Workhouse, Holborn Union at Old-street. Relief Offices: St. Marylebone at East- t, St. Marylebone at Little Union-place. Premises converted into Relief Offices: St. rge's Union at Horseferry-road, St. George's n at Buckingham Palace-road, Holborn n at Old-street, Holborn Union at Far- don Workhouse, St. Marylebone at Brown- t, St. Marylebone at Regent's Park. ools: Nursery, engine-house, and large ctions to the Administrative Offices of St. lylebone Schools at Southall, St. Marylebone ools at Holborn Union Schools at Mitcham. ritable and other Public Institutions: Con- scent Institution for Children at Norbiton, al Patriotic Fund boys school, mortuary for parish of Clerkenwell, schools at Forest Hill the School Board for London, first-class nming-bath for the Commissioners of St. lylebone baths and wash-houses. Hospitals: al Victoria Hospital, Montreal; Royal In- ary, Hull; Royal Infirmary, Aberdeen; jected extensive alterations to Huddersfield rmary; Hull Royal Infirmary, out-patients' artment; Victoria Hospital for Children, out- ents' department; Nurses' Home, St. Maryle- e Infirmary; Leanchoil Hospital, Forres. Paro- l: St. Marylebone, new laundry and able- ied wards; additions to St. George's Union rkhouse, Fulham-road; Holborn Union rkhouse at Mitcham, for 1,000; receiving house and casual wards for the St. George's Union, Hendon Union Workhouse, Middlesex; mortuary for the parish of St. Marylebone; new offices for the guardians of the Holborn Union; dining hall for the St. George's Union Workhouse, Fulham-road; new offices for the guardians of the Fulham Union. He is the author of "Charitable and Parochial Establishments," and "Hospital Construction and Management." The photograph reproduced is by Messrs. W. Notman and Son, Montreal.

CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—IX.

By Banister Fletcher, Jun., A.R.I.B.A.

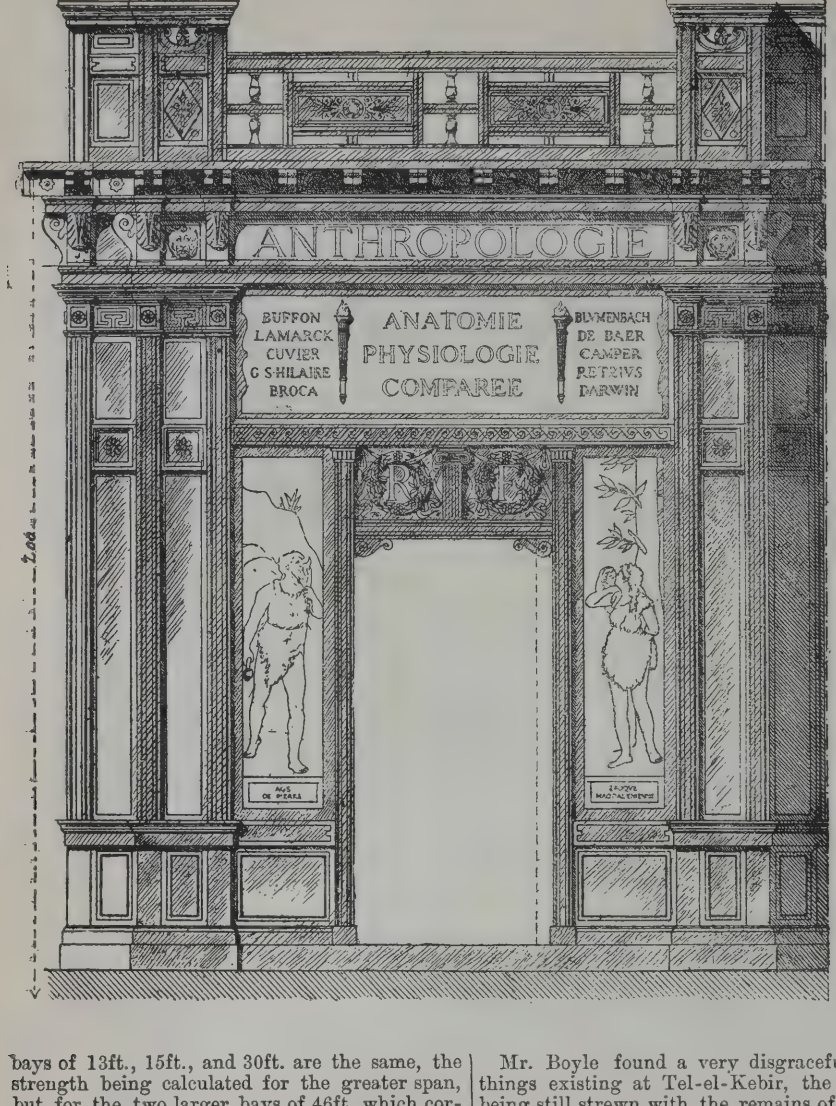
THE RETROSPECTIVE EXHIBITION.

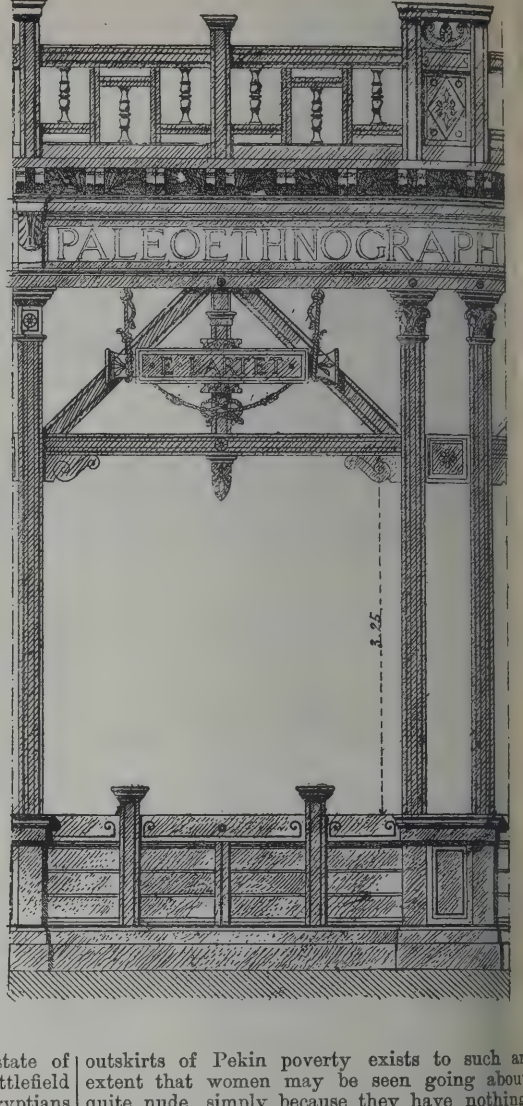
THE wooden framework inclosing this exhibition, the contents of which are described in a different heading, was designed by M. Paul Sedille (No. 63, from *Le Génie Civil*), a French architect well known in England, and to whom I am especially indebted for many kindnesses in enabling me to get at information not accessible to the general public. M. Sedille had all the interior decorations and "installations" under his control, and to him are due to a great extent the harmonious effects of colouring in the interior. He was also the architect for the Porte de la Mosaique at the entrance to the Galerie de Trente Mètres. The two plates here given (Nos. 63 and 64, from *Le Génie Civil*) represent about half the length of the Retrospective Exhibition. The colouring to the woodwork is in shades of green and red, and the construction is beautified by several rather rough, but effective and suitable, frescoes by M. Toché, illustrative of the Histoire du Travail. The construction, as has been mentioned, occupies the whole of the centre of le Palais des Arts Libéraux.



THE GALERIES RAPP ET DESAIX.

The Galerie Rapp and the Galerie Desaix are precisely similar in design and construction, and are placed in the transverse axis of the Champs de Mars, and serve to connect the wings of the Palais des Exposition Diverses with the Palais des Beaux-Arts and the Palais des Arts Libéraux respectively. The Galerie Rapp forms one of the most important entrances to the Exhibition from the Avenue Rapp leading from the Pont de l'Alma. The Galerie (see No. 65, from *Le Génie Civil*) has a span of 30 mètres, or 98ft. 6in., and is comprised of trusses resting on one side on the solid wall of the wings of the Exposition Diverses buildings, and on the Palais des Beaux-Arts side on large iron standards 3ft. 6in. square, which also help to support the glasswork in the Beaux-Arts gable. At a distance of 10 mètres (32·8ft.) from the centre of the building on each side are a row of cast-iron columns, which not only carry the principal weight of the roof, but also support the gallery, which runs from end to end of the building at a height of 22ft. 9in. from the ground, and which projects from the wall the same distance as the columns, about 15ft. (It is round this gallery that are arranged the French architectural drawings, and also those of some other countries, which will be noticed under a different heading.) Above these cast-iron columns is the truss itself, and exactly over the central axis of the column is secured the tie-rod which binds the trusses together; this rod is held up in the centre by a light suspension rod secured to the truss under the ridge. The cast-iron columns are 60ft. 6in. high, and are cast in three pieces. The spacing of these columns varies considerably, owing to the fact that the great constructional lines of the Palais des Beaux-Arts had to be taken into account; here the trusses are 9·20m., or 30·17ft., apart. Another alteration in the spacing was necessary to make the lateral galleries of the Palais agree with the columns of the Galerie Rapp. They are therefore 14 mètres or nearly 46ft. apart at this position. The other spacings of 13·12ft. and 51·21ft. have resulted from the plan, from which also it will be seen that there are seven bays of 30·17ft., two bays of 46ft., two bays of 15·21ft., and four bays 13·12ft. Counting the double purlins which come over the columns, the roof has altogether 17 purlins. The design and strength of the purlins for the





bays of 13ft., 15ft., and 30ft. are the same, the strength being calculated for the greater span, but for the two larger bays of 46ft, which correspond with the lateral galleries of the Beaux-Arts building, they are strengthened by top and bottom plates (see plate). The lighting is from the top by a lantern, which is supported on the nine uppermost purlins by means of uprights in U-irons, between the backs of which is riveted a longitudinal T-iron at the top, on which by the aid of angle-irons are riveted the cruciform sash-bars on which rest the glass. The iron-work throughout is painted "grey-blue," and the columns, although one would think they would look "lanky," are of graceful outline; the part below the gallery is decorated with a spiral flower pattern. The columns themselves are fluted above this gallery, which itself is supported on iron joists running into the wall, on which rest the wooden joists and floor boarding. These are varnished underneath, and are left open to view. The plate given, No. 65, is very complete and detailed in respect to these trusses and columns The total length of the Galerie Rapp, which is exactly the same as the Galerie Desaix, is about 386ft. 6in. The scaffolding (No. 66 from *Le Génie Civil*) for the erection of these two galleries is simple and light, and is on wheels running with the axis of the building, and within the cast-iron columns, the central line of which is shown by a dotted line. Each of the trusses, which weigh about 3½ tons, was completely framed and riveted on the ground and raised in one piece. The cast-iron columns, which weigh about 6½ tons, were raised in four parts.

A SANITARY CRUSADE ROUND THE WORLD.

(*Continued from page* 202.)

WHEN in Cairo Mr. Boyle met Mr. Stanley on his arrival from Central Africa; his father, the late Mr. Robert Boyle, as a friend of Dr. Livingstone from his boyhood, having been an earnest co-worker in the great cause of which Mr. Stanley is now so able a representative.

Mr. Boyle found a very disgraceful state of things existing at Tel-el-Kebir, the battlefield being still strewn with the remains of Egyptians killed in the fight, skulls and bones lying about everywhere, in some places in heaps. That this should be, is highly discreditable not only to the Egyptian authorities, but also to the English officials in Egypt, who take good care that the cemetery where the British slain are buried at Tel-el-Kebir is well looked after.

In India it is a revolting sight to see the poor victims of that most loathsome of all diseases, leprosy, who, as beggars, are permitted to frequent public places, instead of being isolated in hospitals, though there are several for lepers in India maintained by voluntary contributions. Child marriages are a curse to India, and shaving the hair off widows and condemning them to life-long singleness, usually spent in the most abject poverty and misery, is a most barbarous and unnatural custom. The practices of the Hindoo religion, the principal religion of the country, which are often of a very filthy description, tend greatly to retard the advance of sanitary progress, in striking contrast to the Mohammedan and Jain, which inculcate cleanliness by both precept and practice.

It will be readily understood that in a country having a population of over two hundred and fifty-four millions, personal cleanliness must be an important factor in the public health.

We give an illustration of a Burning-Ghat at Benares, described in last week's BUILDING NEWS

Canton is a nest of pirates, murderers, and thieves, where every street is barricaded for protection with strong gates, which are closed at sunset, and where the more respectable portion of the inhabitants store for safety everything they have of value in great strong stone towers, guarded by armed men, and which also serve the purpose of pawnshops.

In Pekin, the streets are publicly used by the inhabitants as a common receptacle, with the grossest disregard of all decency, and the most shameless scenes are to be witnessed. No lady could with propriety pass through the streets of Pekin except in a closed sedan chair. In the outskirts of Pekin poverty exists to such a extent that women may be seen going about quite nude, simply because they have nothing wherewith to clothe themselves. It has long been a popular belief that the population of Pekin was the largest of any city in the world it having indeed been fixed as high as five millions Mr. Boyle has ascertained from most reliable authorities, including the Russian and Dutch Chargés d'Affaires at Pekin, the latter having been resident in the capital for over eighteen years, that it certainly does not exceed half-a million.

Mr. Boyle was struck with the enormous populations of the towns on the Yang Tze Kiang and Yellow Rivers, some of them containing over million inhabitants. The Yang Tze Kiang is the longest navigable river in the world; it is also the longest river, being 3,158 miles in length, or 95 miles longer than the Amazon popularly credited as the longest known river The Yellow River bears the significant synonym of "China's sorrow," owing to its terrible inundations, which bring famine to millions; but Mr. Boyle has been informed, by members of the Yellow River Expedition, that it is proposed to recommend the erection of dykes at different points, for the purpose of keeping the water on the land. If this can be accomplished, it will be an inestimable boon to China.

It is Mr. Boyle's opinion, from what he saw that China has now undoubtedly commenced to move; and with a population of over three hundred and forty millions of people of superior physique and mental ability, acknowledged business capacity, and of untiring energy and patience, it is destined in the future to be one of the great ruling powers of the earth, if even higher position is not in store for it. Confucianism and Buddhism are the professed religions of the country, though the Chinese have really no genuine religious belief.

The Japanese are very cleanly people, and it is the custom to take a hot bath, often several times a day, at a temperature between 100° and 115° Fahr., though in the public baths, in which as many as 400 may have washed, the water



A BURNING-GHAT, BENARES.

changed once a day. Until quite recently sexes used to bathe together indiscriminately, in large towns a railing in the middle of the now divides the males from the females, but not screen them from being seen by each r; but the people are so simple and unsophis-ed that you can never get them to under-d that they are naked. Even in large towns and women may be seen going about their es quite naked, with not even the regulation eaf to adorn them. Female shampooers, are generally blind, are a great institution Japan. Prostitution is rampant in Japan, e being more public women there, in propor-to the population, than in any other country the world, though they occupy a higher l position than elsewhere, and respectable select wives from their ranks. Owing to strict observance of cleanliness, disease is st entirely absent.

he religions of the Japanese enforce cleanli-, Buddhism and Shintoism being the prin-l; the former has more adherents. Buddhism thrice as many votaries as any other creed in world, numbering over 400,000,000; but the r is the original religion of the country, in h nothing is to be found indicative of a f in a future or the existence of a soul. The les at Nikko are superb, and the famous Mêi-Mon Gate, as will be seen from accom-ring sketch, is a perfect gem of carvers' art. more than probable that the Japanese will, re long, adopt some form of the Christian gion, and from all appearances it will be the an Catholic, as that body is considerably d of the Protestants in Japan.

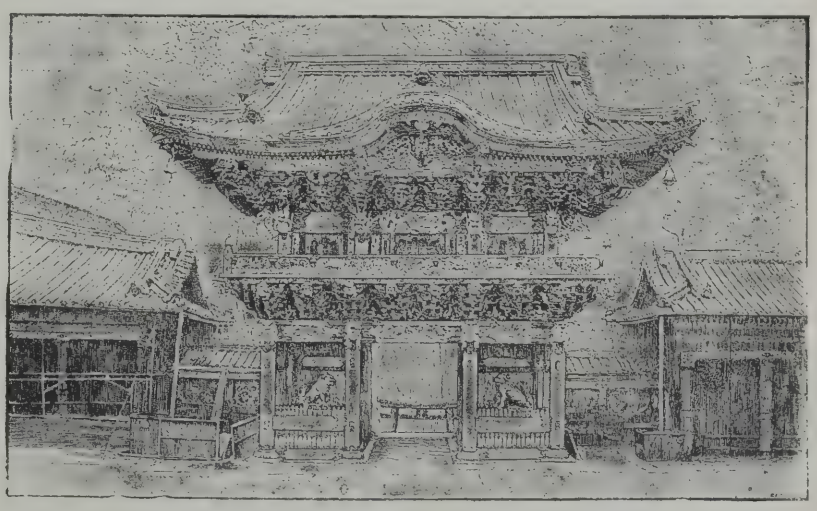
nce the accession of the present Emperor, or ado, the Hara Kiri, or self-disembowelment, rted to under certain circumstances by the er classes, has been abolished, and many r reforms introduced, which have helped tly to advance the country in its present ard progress.

he authorities at Tokio have decided to carry a scheme for the supply of pure water to the tal at a cost of over a million and a quarter ing.

r. Boyle saw granite stones in the walls of old feudal castles at Osaka and Nogoya, an, measuring 20ft. by 14ft. by 10ft., larger any stones used in the Pyramids, or any of ancient buildings of Egypt.

great writer says: "We live in a century h has been prolific of enterprise and inven-, and the vast industrial activities proceeding efrom have revolutionised the material and l conditions of the world. Each of these great forward movements have been pre-eminently the work of one person, specially gifted for the task which he was destined to undertake." It seems to have been Mr. Boyle's destiny to raise the all-important question of ventilation from the obscure and neglected position it occupied to its present proud place in the ranks of the sciences; he has, indeed, laboured unceasingly for the last twenty years in the cause of sanitary science, and the numerous valuable inventions he has produced, a description of which may be found in the biography of "Robert Boyle," by Lawrence Saunders, now in its 20th edition, particularly the air-pump ventilator, upon which he has recently effected important improvements, are known and used all over the globe, and he has well earned the distinction of gold-medallist and other honours conferred upon him by different scientific societies in this and other countries. The Boyles, as founders of the profession of ventilating engineering, have raised the subject to the dignity of a science; and the name of Boyle, in connection with ventilation, has become a household word throughout the world.

It is, as we have already mentioned, Mr. Boyle's intention to publish his experiences in the East, in book form, and from what we have been permitted to see of the work, we believe that it will be a valuable addition to the already lengthy list of descriptive and scientific contributions to literature of which he is the author, and when published, which will be shortly, we can safely predict a large demand for it. Mr. Boyle's next crusade will be to the Congo States, South Africa, and Zanzibar, where he will, doubtless, be as successful as he has been elsewhere in his efforts for the promotion of sanitary science.



YO-MEI-MON GATE, NIKKO, JAPAN.

Mr. E. W. Loft, a distinguished architect of Sioux City, Iowa, died there of consumption a fortnight ago. Mr. Loft, although quite a young man, had carried out many important commissions in and about Sioux City, and was the designer of the curious "Corn Palaces" which have been erected annually in that city for several years.

At the meeting of the Southampton Town Council on Wednesday, Mr. J. H. Thorn presented the town with a framed portrait in oils of Charles Dibdin, the sailors' poet, who was born at Southampton in 1745. It was presented on behalf of the poet's grand-daughter, Mrs. Cecilia Ashe. The portrait was painted from life in 1800, by Kearsley, was exhibited at the Royal Academy, and is to be hung in the Council Chamber.

PRACTICAL ARCHITECTURE WITH DETAILED ESTIMATES.—LXIX.

By Henry Lovegrove, F.S.I., Surveyor.

ESTIMATE FOR A VILLAGE ELEMENTARY SCHOOL.—BILL.

FOUNDER AND SMITH.

Note.—The iron is weighted out at 40lb. to the inch for the foot super.

CAST IRON AND FIXING.

Cwt.	qr.	lb.		£ s. d.
261	0	14	In stancheons	
			No. 7. *Dozen* holes cast and rimed for ¾in. bolts in do.	
			No. 4. Hoisting and fixing stancheons 15ft. 10in. high, weighing about 33½cwt. each, at ground-floor level	
			No. 4. Do. do., 15ft. high, weighing about 31½cwt. each, at first-floor level	
			No. 1. Pattern for stancheon 15ft. 10in. high, T section 1½in. metal and 2in. top and bottom plates and brackets	
			No. 1. Do. 15ft. do., and do. do.	
			„ 1. Do. do., one bracket at bottom	

Ft.	in.		
171	0	Run.	5in. moulded eaves gutter, with proper red-lead joints, bolted together, and securely fixed to fascia
			No. 14. Extra for stopped ends
			„ 8. Do. do. outlets
185	0	Run.	4in. square rain-water pipe with ornamental collars and joints of red-lead and tow, and securely nailed to brickwork
			No. 8. Shoes to do.
			„ 8. Purpose made moulded ornamental heads to design
			No. 6. Do. swan-neck bends
			„ 16. Galvanised wire gratings and fixing over outlets, &c.
			No. 14. Grates

WROUGHT IRON AND FIXING.

			In rolled iron joists and fixing at 15ft. from ground level (61ft. 2in.)
			Do. do. 30ft. do. (61ft. 2in.)

Cwt.	qr.	lb.	
1	3	7	Chimney bars with ends split and turned up and down
13	0	7	Straps and bolts and fixing by carpenter
			No. 21. Holes through iron joist for ½in. bolt
			No. 24. Do. do. for ¾in.
			„ 21. ½in. bolts 5in. long, with heads, nuts, and washers
			No. 24. ¾in. do. 4in. long, do. do. do.
			„ 16. Do. 6in. do. do.
			„ 8. Do. 9in. do. do.
			„ 16. Do. 10in. do. do.

Ft.	in.		
280	0	Run.	Runners and fixing in block flooring, with screws and countersunk holes
120	0	Run.	Guide and do. do. fixed to wood
60	0	„	Do. as last fixed to brickwork
			No. 48. Hatfield's patent roller sheaves on iron knees, fixed with screws and countersunk holes
			No. 4. Ornamental rests for fire-irons let into stone jambs and run with lead (to design)
			No. 1. 18in. diameter bell of good tone, of Messrs. Warner's manufacture, and hanging where directed with all necessary gear and gratings, ¾in. galvanised iron chain and rope to ring from ground about 52ft. from floor level

Carried to summary .....

PLASTERER.

Yds.	ft.	in.		£ s. d.
593	0	0	Sup. Render, float, and set, twice distemper walls	
	168	0	Run. As last, 5in. wide to recesses	
	45	0	„ Do. do. circular to soffit	
45	0	0	Sup. Lath, plaster, float, set, and twice distemper partitions	
395	0	0	Sup. As last on ceilings and soffits	
422	0	0	„ Do. in panels do.	
	24	0	Run. Labour to quirk in plaster	

PORTLAND CEMENT.

275	0	0	Sup.	Rendering to form dado on brick
7	0	0	„	Do. on lath
	43	0	Run.	Do. 5in. wide to recess
	9	0	„	Angle and arris
568	0		„	Flush bead 1½in. wide
				No. 47. Internal mitres
				„ 14. External do.
				„ 40. Stopped ends
	246	0	Run.	Keene's cement, angle and arris
	45	0	„	Do. and do. circular

Carried to summary .....

PLUMBER.

Cwt.	qr.	lb.		
41	1	14		Milled lead and labour on roofs
5	1	21		Do. do. dressing to circular roof
	3	21		Do. seatings

Ft.	in.		
24	0	Run.	Close copper nailing
			No. 12. Bossed ends to roll
			„ 16. Mitres of lead do.
			„ 4. Extra to drips in gutter
			„ 48. Soldered dots and screws
			All the water supply to be executed in accordance with the water company's regulations

	£ s. d.
Allow for paying all fees legally demanded	
The lead pipes to be of the following weights :—	
½in. service 6lb. per yard	
¾in. do. 9lb. per yard	
1¼in. do. 16lb. per yard	
1½in. waste 14lb. per yard	
1½in. do. 18lb. per yard,	

Ft.	in.		
7	0	Run.	½in. lead service pipe, including length, joints, bends, hooks, &c., and fixing
285	0	Run.	¾in. do. all as last
42	0	„	1¼in. do. do.
100	0	„	¾in do. and dig trench not less than 2ft. 6in. deep for same, and fill in earth and ram and level (provisional)
10	0	Run.	1¼in. lead waste pipes as first
43	0	„	1¼in. do. do.
4	0	„	1½in. copper perforated pipe
			No. 1. Stopped end to do.
			„ 1. ½in. soldered joint (extra)
			„ 8. ¾in. do. do.
			„ 4. 1½in. do. do.
			„ 2. Ends 1½in. lead pipe made good to trap

BRASSWORK, JOINTS, AND FIXING.

			No. 1. 3in. grating in slate
			„ 2. ½in. boiler screws and double nuts
			No. 2. 1½in. do. do.
			„ 2. ¾in. ferrules and tap Company's main
			No. 6. ¾in. piston valves
			„ 1. ½in. screw down stop-cock
			„ 4. ¾in. do. do.
			„ 2. ¾in. ball valves and copper balls
			„ 2. Wrought-iron galvanised cisterns, each to contain 200 gallons, and fixing on and including proper bearers where directed
			No. 2. Holes in do. for ¾in. pipe
			No. 6. 12in. diameter white glazed wash basins, with brass plugs, chains, and washers, and fixing in slate top
			No. 6. Twyford's Unitas w.c. apparatus and fixing
			No. 6. Water waste preventers, with iron brackets and fixing, including chain pull and ring handle, p.c. 25s. each
			No. 2. Perforated zinc panels, 16in. by 12in., and fixing
			No. 1. Do., 16in. by 16in., and do.

Carried to summary .....

GLAZIER.

Ft.	in.			£ s. d.
357	0	Sup.	21oz. best flatted sheet glass, and glazing in small squares	
655	0	Sup.	Hartley's ribbed glass ½in. thick do. do.	
2	0	Run.	Circular cutting and risk on do.	
58	0	Sup.	Glass in doors fixed with beads, under 6ft. in a square	
			Leave all clean and perfect.	

Carried to summary .....

PAINTER.

Yds.	ft.	in.		£ s. d.
110	0	0	Sup. Paint four oils on iron	
	422	0	Run. Bolt and strap	
	171	0	„ Eaves gutter in and out	
	185	0	„ Rain-water pipe	
			No. 8. Shoes	
			„ 8. Heads	
			„ 6 Bends	
	460	0	Run. Runner guide, &c.	
			No. 48. Roller sheaves	
282	0	0	Sup. Paint four oils on cement	
	568	0	Run. Bead do.	
82	0	0	Sup. Knot, prime, stop, and paint three oils on wood	
	38	0	Run. Frame one side	
			No. 150. Ends of rafters	
			„ 94. Frames finished white (one side)	
			No. 24. Small do. do. (do.)	
			„ 65. *Dozen* small sash squares (do.)	
754	0	0	Sup. Size, stain, and twice varnish woodwork	
175	0	0	Sup. Do. roof timbers do.	
	31	0	Run. Wall string and skirting	
	24	0	„ Outer string with capping	
	159	0	„ Baluster	
	20	0	„ Newel	
	202	0	„ Frame (one side)	
			No. 94. Frames (one side)	
			„ 24. Small do. do.	
			„ 65. *Dozen* small sash squares (do.)	
			„ 2. Do. large do. do.	
			„ 2. Sashes in 12 small squares	
			„ 6. Do. in 16 small squares	
			„ 28. Do. in 20 small squares	
			„ 16. Do. in 25 small squares	

Carried to summary .....

SUMMARY.

	£ s. d.
Preliminary excavator and bricklayer	
Mason	
Tiler	
Carpenter, joiner, and ironmonger	
Founder and smith	
Plasterer	
Plumber	
Glazier	
Painter	
£	

Building Intelligence.

Great Grimsby School Board.—The Jame Meadows Schools have recently been complete and handed over to the board, and provid accommodation for 200 girls, 300 boys, and 40 infants; total, 1,000. The buildings are al covered with Broseley tiles, and built of red brick with Ancaster stone dressings. The floors ar of wood blocks, and the heating and ventilatio by a combined system of hot water, with radiator &c., by Messrs. Ashwell, of Leicester. The cos is under £6 per head. Messrs. Walker an Cook, of Grimsby, have been the contractors Mr. W. W. Gravell, clerk of works; and Mr E. W. Farebrother, F.R.I.B.A., of Grimsby, th architect.

London School Board.—At the last meetin of this Board, Mr. Helby called attention to th enormous rise in the tenders for school building the amount being about £16 10s. a head fo building alone, or £22 including site. Makin every allowance for the rise in the cost of materi and of labour, and for an increase owing to th Board insisting upon its contracts being carrie out strictly, he thought that the Board migh still save something by having independent archi tects. He moved, therefore, that Mr. Ewa Christian should be requested to prepare plan and specifications for a school for 1,200 childre on the Lillie-road site (Chelsea). In thus movin he meant no slight upon the Board's architec The amendment was carried on a division, but o a further division on the amendment as a sub stantive motion the numbers were equal, and th matter therefore dropped.

Perth.—The new nave of St. Ninian's Epis copal Cathedral, which, after standing for thirt years in an unfinished state, was recently com pleted, was consecrated on Friday by the Righ Rev. Dr. Wordsworth, Bishop of St. Andrew's The initiative in the erection of the cathedr was taken in 1847 by the late Lord Forbes, an the work was begun in 1849. Owing to the wan of funds the cathedral was left in an incomplet state, in which it remained until about thre years ago. A proposal to have it extended i accordance with the original plans of Mr. W Butterfield, of London, was adopted at a Diocesa Council. Sufficient funds had been subscribe by the beginning of 1888 to justify the acceptanc of contracts, and the work has therefore bee finished at a total cost of about £7,000. As stood before completion the cathedral consisted a choir, two transepts, one bay of the nave, an of the two aisles, and the additions made inclu three bays to nave, north and south transept and a western tower; and sitting accommodatio has been provided for about 900 persons.

The town council are about to alter and impro the Harvey Institute at a cost of about £3,800, accordance with plans prepared by Messrs. Tayl and Cox.

Messrs. C. Isler and Co., of London, have co pleted artesian bored tube wells on their improv principle at the Kirkstall Brewery Co. Lim., Lee where for some time past the supply has all b failed from the existing dug well, and, after reac ing the depth of 160ft. from the surface, sprin were struck yielding 6,000 gallons of water p hour, without reducing the head of water. Simil results are obtained at Mr. J. W. Wrigh Brewery, Armley, Leeds. At Messrs. J. C. and Field, Limited, London, a continuous supply over 7,000 gallons per hour is obtained from artesian bored tube well, 404ft. deep. At Mess A. M. Perkins and Son, Limited, Regent-squa Gray's Inn-road, an artesian bored tube w 300ft. deep, yields continuously at the rate of 3,0 gallons per hour. At the Pure Water Compa Limited, Battersea, the yield from a 400ft. artes bored tube well is over 3,000 gallons per ho Similar results are met with at Messrs. Bow Brothers, Park-street, Bermondsey, from artesian bored tube well, 350ft. deep. Amon their various contracts, Messrs. Isler are at pres engaged at Hatfield, having received orders fr the Marquis of Salisbury, to fix an artesian bo tube well to supply the town with water; Mes Shoolbred and Co., Tottenham House, Tottenh Court-road; Messrs. Peters Brothers, Roches fixing a 15½in. diameter artesian bored tube w 300ft. deep, into the lower green-sand formati Messrs. Bramwell and Co., Wear Brewery, Sund land; also at Messrs. G. Clark's, Limited, sh building yard, Sunderland, and at the Kelste Brewery, Flint.

TO CORRESPONDENTS.

We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to PASSMORE EDWARDS.

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One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India (viâ Brindisi), 10s. 4d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is. per line of Eight words, the first line counting as 5, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 36 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph advertisement inserted for less than 5s.

SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FIVE WORDS, and Sixpence for every eight words after. *Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLI., XLIX., L., LI., LIII., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—G. and P.—S. and Co.—W. and J. R. F.—F. J. and Co.—G. C.—W. B.

Correspondence.

THE OWNERSHIP OF PLANS.

To the Editor of the BUILDING NEWS.

SIR,—I beg indulgence to say a few words in reply to an article, "The Ownership of Plans," which appeared in your issue of June 24th.

My brothers in architecture on that side of the Atlantic will find, as I have found on this side, that Courts in general have little sympathy with the "high-toned" rules and regulations of the various professions.

With regard to the ownership of plans, &c., it has been held that when a person has paid for any certain thing it becomes his property when final payment has been made, so that, if architectural drawings and other matters pertaining thereto are to remain the property of the architect after he has received his commission, it must be clearly and mutually understood and agreed by and between himself and client; in other words, a contract must be drawn up and entered into by these parties to the effect that the drawings and other documents be considered as instruments of service only, and as such are the property of the architect, and shall be returned to him when their special mission has been discharged. Provision also should be made in case of the abandonment of the proposed work. Furthermore, if copies are supplied to the owner, it should be agreed then and there that they are supplied as a guide to the building for which they were made only, and that no other use be made of them without the knowledge and consent of the architect.

Not only should this be the rule between architect and client, but a clause should be inserted in the contract between the client and the builder, that "It is mutually understood and agreed, and is hereby agreed by the parties hereto, that all drawings, plans, and specifications are instruments of service only, are the property of the architect, and must be returned to him at his office when the work for which they are intended is completed." This will give ample security against all loss or damage occasioned by the retention or loss of any drawings or copies by the builder.

There is far too much of what is called professional etiquette, which is no more than a sham and a humbug, and the sooner it is laid aside and the more solid and practical details of business practised, the sooner will the profession and its individual members generally be benefited.

No honest man will refuse to sign a just and honest contract, nor will he think the less of the man who requires him to do so. The man who has his brains for sale is exactly on the same footing as the man who has bricks for sale, and all obligations of whatsoever kind should be made as binding as the law allows. No Court will decide against a contract honestly entered into and duly signed by the contracting parties. This, at least, has been my experience in this country, since I discovered the fallacy of supposing our rules and precepts would be considered law. It is the general rule in the Western cities of this country to insert the above clause in all the builders' contracts, and it has been my rule to have contracts with all my clients, and only in one instance have I been compelled to take the matter into Court, when I came out victorious.—I am, &c.,

JOHN GEO. THURTLE.

57, Ingalls Block, Indianapolis, Indiana,
U.S.A., July 26, 1890.

CHIPS.

From an answer given in the House of Commons on Monday night by the Chancellor of the Exchequer, it appears that the trustees of the National Gallery are negotiating with the Earl of Darnley for the purchase of three pictures from his collection.

The will of Mr. Thomas Andrew Walker, the railway and dock contractor, has been proved at upwards of £982,000.

The Lord Bishop of Llandaff on Thursday in last week unveiled a memorial window in the chancel of the parish church of Christchurch (Mon.), in memory of the late vicar, the Rev. F. H. Archer. The window was designed by Mr. C. E. Kempe, Northampton-place, London, and erected at a cost of £250.

Large additions are being made at Swaylands House, Penhurst, the residence of Mr. George Drummond. Mr. M. E. Macartney is the architect. The whole of the fireproof floors are being put in on Fawcett's system.

In our notice of the laying of the foundation-stone of the Royal South London Ophthalmic Hospital by the Prince of Wales on the 25th ult. we omitted to mention the builder's name. Mr. William Downs has the contract, which is about £20,000.

Kilmallie parish church, near Fort William, N.B., was reopened last week after partial rebuilding, including new roof and seats, the addition of a vestry and porch, and the filling-in of a memorial window with stained glass representing the Resurrection of our Lord, a work carried out by Messrs. Ballantine, of Edinburgh. Mr. Macintosh, of Oban, was the architect, and Mr. Macnab the general contractor.

The old Halle aux Blés in Paris has been transformed into the Bourse de Commerce, and was reopened on Sunday. The well-known dome now surmounts a circular hall about 150ft in diameter, round which the new buildings, which are about 50ft. wide, form a ring. They are divided into offices, the greater number of which are now set apart for business purposes. One section of the buildings has been arranged as a commercial museum by the Société Coloniale Commerciale et Industrielle.

A fine art and industrial exhibition was opened at Lanark by the Earl of Home on Saturday. The exhibits are in six sections, and occupy the whole of the grammar school. The loan collection of old masters is an exceptionally good one, and the Braidwood collection of Bibles, lent by Dr. Hunter, contains many rare specimens.

Fearnought Cabinet Works, Bedford-street North, Halifax, occupied by Mr. Hiram Rothwell, were burnt down on Saturday. The building was the property of Messrs. George Greenwood and Sons, builders' merchants, and contained two rooms, each 60ft. by 30ft. The damage is estimated at £2,200.

At a meeting of the Association of Public Sanitary Inspectors, held on Wednesday night at Carpenters' Hall, Mr. Alexander, the chairman of the Council, announced that Dr. B. W. Richardson had acceded to the request of the Council that he would accept the presidency of the Association in succession to Sir Edwin Chadwick. He was unanimously elected to the office, and will give an inaugural address on the life and work of his distinguished predecessor.

Intercommunication.

QUESTIONS.

[10336.]—**Double Flights.**—Are there any published examples of double stairs? I shall be glad of any notes of old and modern examples. How are they generally constructed?—ESCALIER.

[10337.]—**Stoup.**—Of what does this generally consist? and please inform me if there are any Mediæval instances in good preservation?—ALF.

[10338]—**Beam.**—A beam over a 32ft. span is loaded with 1½cwt. per foot run, with the exception of 8ft. at one end. Determine the reaction upon the supports.—L. L. D.

[10339.]—**Centrolinead.**—I should be obliged if some reader used to the centrolinead would kindly give directions as to the method of using and setting this instrument?—PERSPECTIVE.

[10340.]—**Board Schools.**—I should be pleased if any of your numerous readers would kindly inform me whether there are any good modern books on the design and arrangements of higher-grade board schools; if so, what are the names of writers and publishers? Am anxious to get the best works on the subject.—ENQUIRER.

[10341.]—**Camber.**—Can any reader give me the literal meaning and derivation of the word "camber"?—J. H. V.

REPLIES.

[10322.]—**Reredos.**—The most ancient examples of this screen are found at York, Durham, and Winchester. Exeter has an old example. The reredos is generally composed of tabernacles or niches, or of plain painted decorations of patterns. Hangings of tapestry and silk are often placed over the wall as a background. Several examples have been illustrated in the BUILDING NEWS: one in Westminster Abbey, 1867; one in Gloucester Cathedral, 1873; and one in St. Martin's, Brighton, 1881.—G. H. G.

[10326.]—**Storage Reservoirs.**—J. Bailey Denton's work on "Storage of Water," 1874, reviewed in "B. N.," and the articles on the subject in "B. N." of 1869, may be referred to by the student. Taking a daily consumption of water at 16 gallons per head per day, impounding reservoirs should contain 120 days' supply in rainy districts, and 200 in dry districts. Service reservoirs should contain three days' supply. Cement concrete can be used for a reservoir, and these should be asphalted with Claridge's patent asphalte.—G. H. G.

[10327.]—**Cost of Repairs.**—For some houses an allowance of ten per cent. on the rental is made for repairs: but it is obvious that there can be no absolute rule, so much would depend on the manner in which the house was originally built.—H. L.

[10327.]—**Cost of Repairs.**—The cost of repairs for buildings of usual character and condition may be taken at 1 to 2 per cent. on the cost of building. The allowance made for repairs of houses is generally taken at one seventh of the rental. See Hurst: Tarbuck's work on valuation of Property.—G. H. G.

Additions have been made to University College, Nottingham, the ventilation of which is carried out on the Boyle system, the extraction of the vitiated air being effected by the latest improved form of the self-acting air-pump ventilator.

At a meeting of the newly-formed board of guardians of Great Grimsby and 23 outlying parishes, held on August 1st last, Mr. E. W. Farebrother, F.R.I.B.A., of Grimsby, was appointed the architect for the new workhouse buildings by a majority of 37 votes to 3. The buildings, which will be erected on a commanding site adjoining the town, will be on the pavilion system, and be replete with every modern convenience.

On Sunday special services were held at St. John's Church, Canton, Cardiff, in connection with the dedication of the reredos recently erected in the church. The reredos is of Caen stone, with red and green Irish marble columns supporting the cusping and canopies. The three niches are to be filled with paintings in oil on canvas, the centre portraying the Good Shepherd, with St. Peter and St. John on either side. New altar steps of red Dumfries stone have been introduced. The work has been carried out by Mr. William Clarke, of Llandaff, from the designs of Messrs. Kempson and Fowler, architects, Llandaff.

At the half-yearly meeting of the City and South London Railway Company the chairman stated that the entire subway from King William-street to the Swan at Stockwell was now finished, and the permanent way had been laid throughout the tunnels. The electric main cable for conducting the electricity was also laid through both tunnels, as was the service conductor which would conduct the electricity to the locomotives. The construction of the lifts had taken much longer than had been anticipated, and this had caused delay in the completion of the work. The stations would eventually be lighted by electricity, but for the present gas would be used. It would be necessary for the railway to be worked for a short time before it was opened to the public; but he believed the opening would take place at the end of next month. The extension to Clapham Common, for which the company had obtained Parliamentary sanction, would not be proceeded with until the first portion of the line was in working order.

Our Office Table.

Mr. Cavendish-Bentinck has been misled in asserting that the remains of Grinling Gibbon's throne are *still* to be found in a lumber-room at Canterbury Cathedral. Archdeacon Smith, writing from the Precincts in that city, says he has never been able to find them, and if Mr. Cavendish-Bentinck has, as he asserts, actually seen those relics, it is possible he may be able to assist in discovering and restoring the fragments of the throne to the minster. The Ven. Archdeacon corrects another little blunder of Mr. Cavendish-Bentinck in ascribing to Grinling Gibbons the stalls at the west end of the choir of the Cathedral. They appear to be identical with the work for which the Chapter contracted in 1682 for £320 with Mr. Roger Davis, who had erected for them the wainscoting of the choir in 1676. Mr. Bentinck admits in his reply that the fragments of the pulpit are not to be found now, but explains that some years since he was shown them in a store in the east cloister of the Cathedral by Mr. H. G. Austin, then surveyor to the fabric. As to the choir stalls traditionally ascribed to Gibbons, he maintains that the main point is not by whose hand they were carved, but whether they were not too beautiful in design and execution to justify the present Dean's endeavour a few years since to sweep them out of the Cathedral and replace them by the late Sir Gilbert Scott's work.

Good progress is being made with the works of excavating the Priory foundations in the parish churchyard of Kenilworth. The contractors, Messrs. E. Smith and Son, have now cleared the outlines of the entrance and porch, the north transept, the south transept, part of the chapel and annex, a portion of south cloisters and north cloister walk, and the nave and columns of the tower. The cloister garth, chamberlain's offices, and several other parts will not be disclosed under the present contract. The church and offices must have been very extensive, as the portions disinterred show. It was found necessary to excavate 4ft., or very considerably deeper than was at first anticipated, to get to the floor levels. Two tombs discovered are interesting features. One is very richly ornamented, and possibly belonged to the founder. Evidences of several monuments and statues, with sculpture, were found. Every fragment of masonry yet found has been of excellent design and detail. A number of carved stones, tiles, and other relics, including 13 corbels, have been deposited in that part of the ruins which has been for years in a state of preservation known as "the Tantarra." Here they are safely locked up, but visitors can see them through the open iron-barred gate, and, on application, can make a closer inspection. New walls, about 4ft. 6in. high, are now being built round the churchyard, and are to be surmounted with palisades, giving a finish to the work, and support the earth around. The work has been carried out without any disturbance to existing graves, and the accomplishment of the scheme will be completed by the time agreed upon. During the past week the work of relaying the turf has been commenced on some portions of the ground.

The thirty-third annual report of the National Portrait Gallery announces the death of one of the trustees, Lord Lamington, in February last, and the appointment to the vacancy thus created of Mr. W. H. Alexander, the donor of the new gallery which is about to be erected at the rear of the National Gallery from Mr. Ewan Christian's designs. Fifteen gifts and half-a-dozen purchases are recorded. The list of 452 donations given in previous reports has been brought up to 467 during the past year, and includes portraits of Lord Iddesleigh, painted by Edwin Long; Sir Elijah Impey, in crayons, by Sir Thomas Lawrence, P.R.A., at the age of 16; T. De Quincey, plaster bust, by J. Steell, R.A.; J. Flaxman, R.A., General Sir Willoughby Cotton, G.C.B., Captain Arthur Conolly (the Central Asian explorer), and Professor H. H. Wilson, all four by James Atkinson; Oliver Goldsmith, Belzoni, Sir E. Landseer (painted by Sir F. Grant, P.R.A.), Earl Minto, Marquis of Hastings, Sir Rowland Hill, and Mr. Robert Browning. The purchases, amounting in all to 433, have received the following accessions during the year:—J. Grimaldi, Dr. J. Wolcot ("Peter Pindar"), by J. Opie, R.A.; John Dryden, by Sir G. Kneller; Admiral Sir Sidney Smith (the picture representing an incident at the siege of Acre), a painting by Raeburn of Professor J. Playfair (the natural philosopher and mathematician), and an engraving of General Monk, Duke of Albemarle.

Trade News.

WAGES MOVEMENTS.

Bolton.—The negotiations for a settlement of the strike of cabinetmakers at Bolton have fallen through. The employers offered to concede ½d. per hour advance to the day-wage men, and 5 per cent. all round to the piece-hands; but this was rejected by the men's committee, who adhere to the previous resolution, which is 10 per cent. advance all round for piecework, and ½d. per hour for day-wage men.

Barnsley.—There have been further negotiations between the Barnsley carpenters and joiners and their employers. The latter now offer to give 7¾d. per hour, as against an offer last week of 7½d., now, and an advance of ½d. in thirteen weeks. The men refuse to accept less than 8d. per hour, which they had asked.

Edinburgh.—The conference of stoneworkers, which began in Darling's Hotel, Edinburgh, on Tuesday week, was resumed there on Friday, Mr. John Adam, Aberdeen, presiding. The rules by which the Amalgamated Union of Stone and Quarryworkers is to be conducted were read by Mr. A. Carter, Enderby, Leicestershire, who has acted as secretary of the Conference. On the motion of Mr. W. Forrest, Bonawe, Argyleshire, seconded by Mr. J. Ward, Huncote, Leicestershire, the rules were adopted unanimously. The business of the Conference—so far as the amalgamation of the Scottish Settmakers' Union and the National Union of Quarrymen of England was concerned—having thus been completed, the English delegates withdrew, leaving the Scottish delegates, under the presidency of Mr. J. Miller, Ratho, to frame regulations suitable for their respective districts.

Medway Cement Works.—The men employed at the Beaver Cement Works, Frindsbury, and at Mr. Ball's works at Strood, are out on strike, the total number of men out reaching close upon 200.

CHIPS.

The fine organ of Hereford Cathedral is to be entirely reconstructed at a cost of about £2,000.

An interesting excursion in connection with the Archæological Section of the Birmingham and Midland Institute took place on Saturday last, when Lilbourne, Stanford, and Swinford were visited.

The Pontypridd board of guardians are about to build cottage homes for pauper children, on the main road from Llantrissant to Pontypridd, from plans by Messrs. Seward and Thomas, of Cardiff. The work will be carried out by Messrs. Turner and Sons, of Cardiff, at a cost of £7,482.

The annual meeting of the Monmouthshire Antiquarian Society took place at Newland on Monday.

The dredging of the channel of the River Medway has been completed by the Naval authorities. The works have cost about twenty-five thousand pounds, and heavy battle ships will now be able to pass between Chatham and Sheerness at ordinary tides with their equipment on board.

Holloway's Pills.—The balsamic nature of Holloway's Pills commends them to the favour of debilitated and nervous constitutions, which they soon resuscitate. They dislodge all obstructions, both in the bowels and elsewhere, and are, on that account, much sought after for promoting regularity of action in young fema'es and delicate persons.

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TENDERS.

*** Correspondents would in all cases oblige by givi... the addresses of the parties tendering—at any rate, of ... accepted tender: it adds to the value of the informatio...

Avonmouth.—For the erection of a Customs wat... house and a boat-house, for the Bristol Docks Committe...
Krauss, A., Bristol (accepted) ... £620 0 0

Avonmouth.—For erecting a railway company's offi... for the Bristol Docks Committee:—
Krauss, A., Bristol (accepted) ... £317 8 1

Balham.—For alterations to St. Mary's Church, B... ham:—

Dove Bros.	£2,875 0 0
Allen and Sons	2,672 0 0
Smith and Sons	2,547 0 0
Candler, G. and Sons	2,323 0 0
Peacock Bros....	2,304 0 0
Carmichael, J.	2,185 0 0

Birkenhead.—For decorating the assembly room of t... town hall, for the town council:—
White and Sons (accepted) £500 0 0

Blackheath.—For the erection of four dwelling-hous... with shops at Coombe Farm-lane, Blackheath, for Mr. ... Murray. Mr. J. J. Downes, 11, The Parade, Lewisha... High-road, architect:—
Lorden and Son £3,330 0 0
(No competition.)

Blackfriars.—For reconstructing the floor and fro... of warehouse at York-street, Blackfriars-road, for Messr... J. Clark and Son. Mr. J. J. Downes, 11, The Parad... Lewisham High-road, architect:—

Dowling, T.	£520 0 0
Leng, T.	416 0 0
Falkner, F. W....	373 0 0
Lorden and Son (accepted)	371 0 0

Bournemouth.—For house, Knyveton-road. Mr. H. ... Hawker, architect:—
Jenkins and Sons (accepted) ... £2,150 0 0

Bournemouth.—For additions to the Lawn. Mr. H. ... Hawker, architect:—

George and Harding	£645 0 0
Jenkins and Sons	546 0 0
Hoare, W.	472 0 0
Walden, F. (accepted)	464 0 0

Bournemouth.—For additions to the Firs Home. M... H. E. Hawker, architect:—

George and Harding	£1,070 0 0
Jenkins and Sons	1,048 0 0
Hoare, W. (accepted)	1,039 0 0

Bournemouth.—For terrace houses, Stafford-road. M... H. E. Hawker, architect:—

White, J.	£7,230 0 0
Jones, W.	6,666 0 0
Walden, F.	6,650 0 0
James, G.	6,615 0 0
George and Harding	6,371 0 0
Jenkins and Sons	6,350 0 0
Hoare, F., and Sons...	6,148 0 0
Lucas	6,095 0 0
Barrow and Entwistle	5,980 0 0
Hoare, W. (accepted)	5,466 0 0

Bournemouth.—For house, Surrey-road. Mr. H. E... Hawker, architect:—

Jenkins and Sons	£1,668 0 0
James, G.	1,625 0 0
Jones and Sons	1,575 0 0
Lucas	1,500 0 0
George and Harding	1,490 0 0
White	1,475 0 0
Brewer...	1,470 0 0
Hoare, F., and Son (accepted) ...	1,464 0 0

Cadoxton-Barry.—For carrying out the first section o... the Cadoxton private improvement scheme, for the loca... board. Mr. J. Robinson, C.E.:—
Smith, R., Cardiff (accepted) ... £2,847 10 1

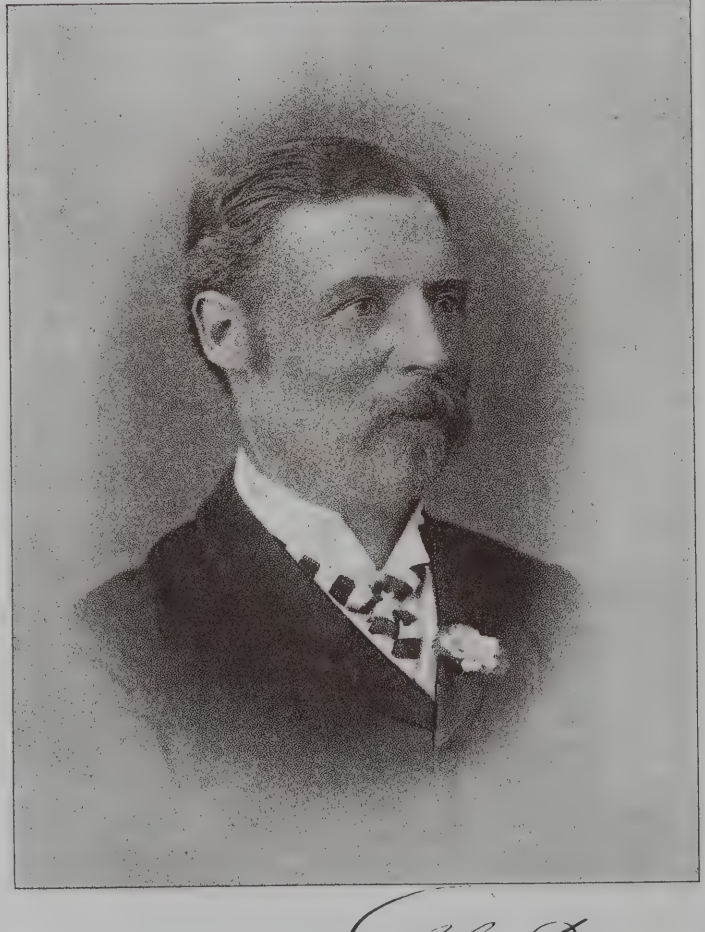


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Geo Soudon Bridgman

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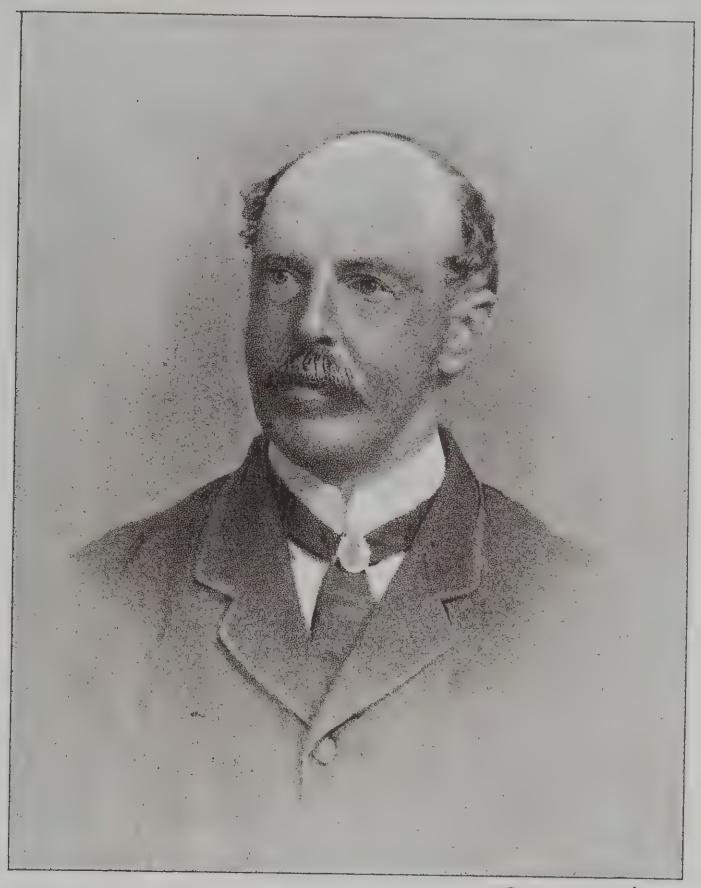


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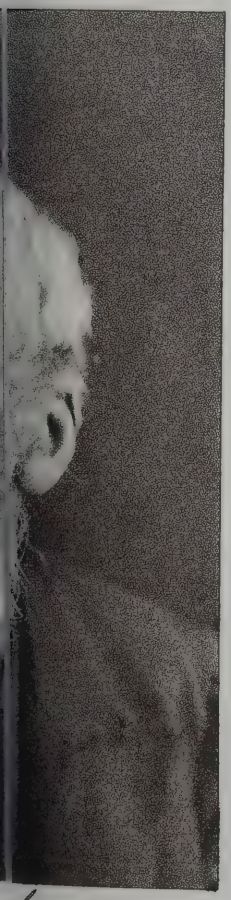
Wm. Caesick

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S · GLASGOW ·



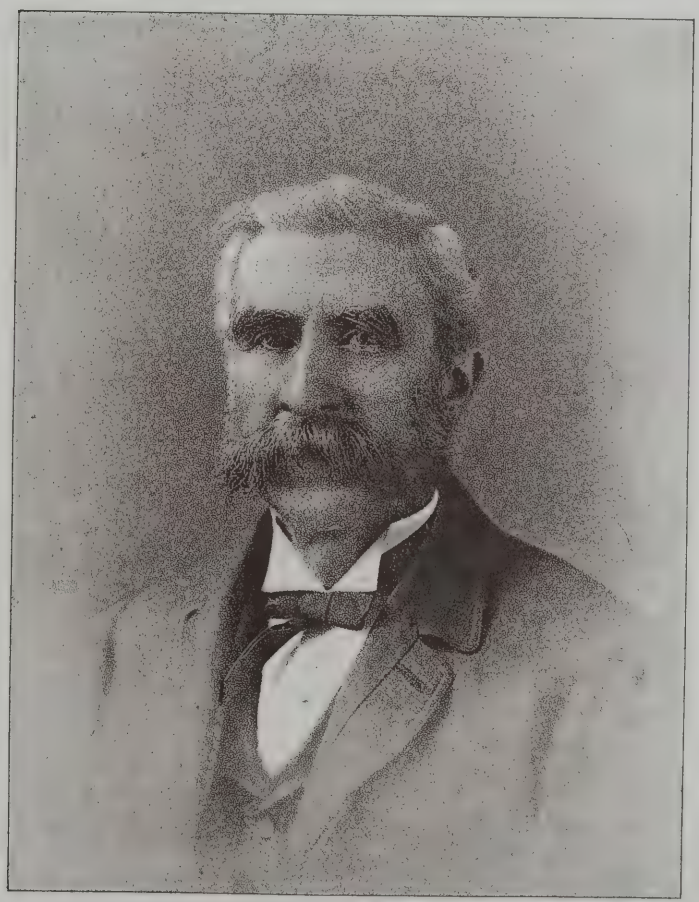
Andr. Heiton

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ARCHITECT · OF · THE · RUTLAND · SQ · PRESBYTERIAN · CHURCH · DUBLIN ·



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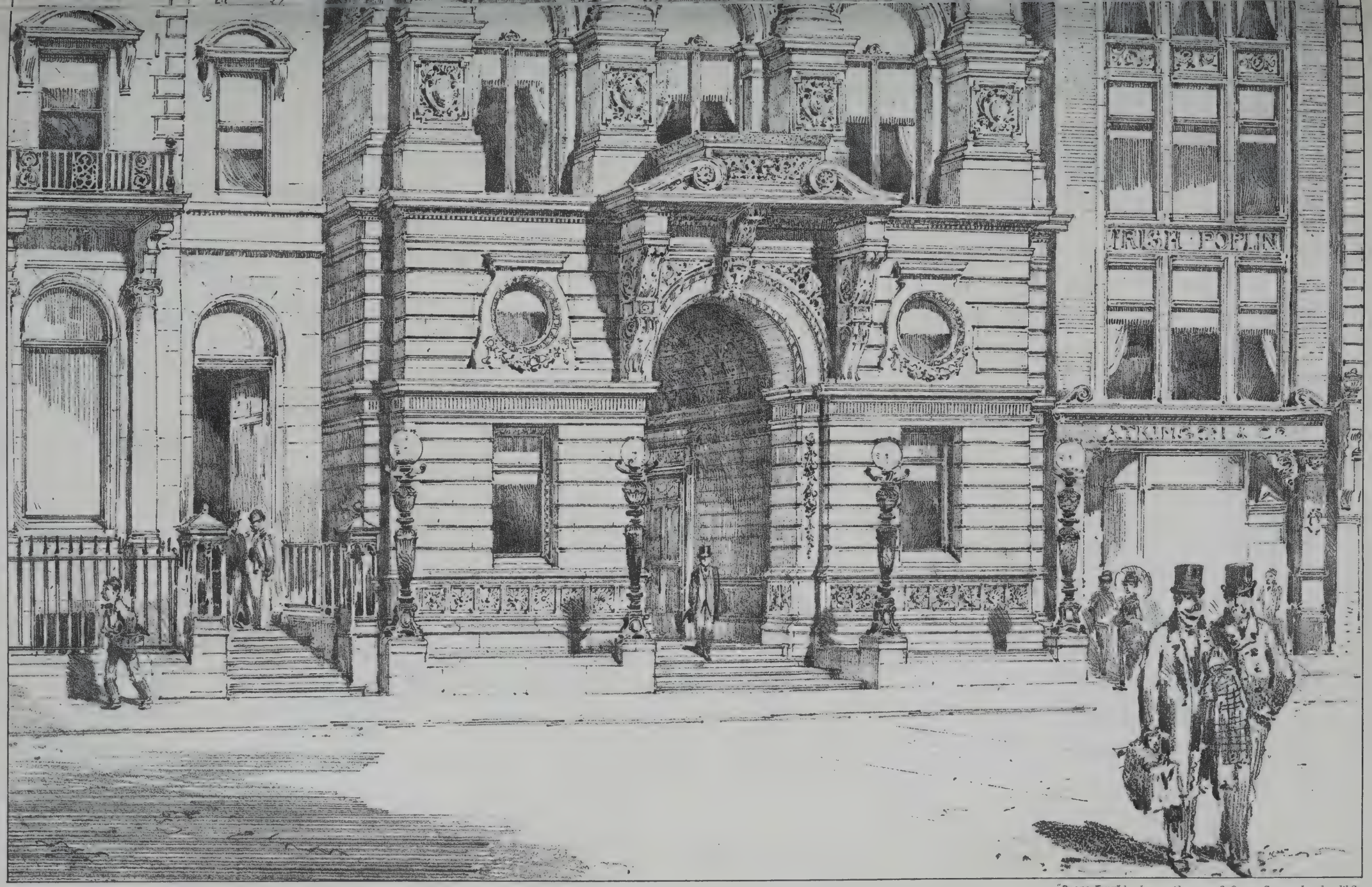
Henry Saxon Snell

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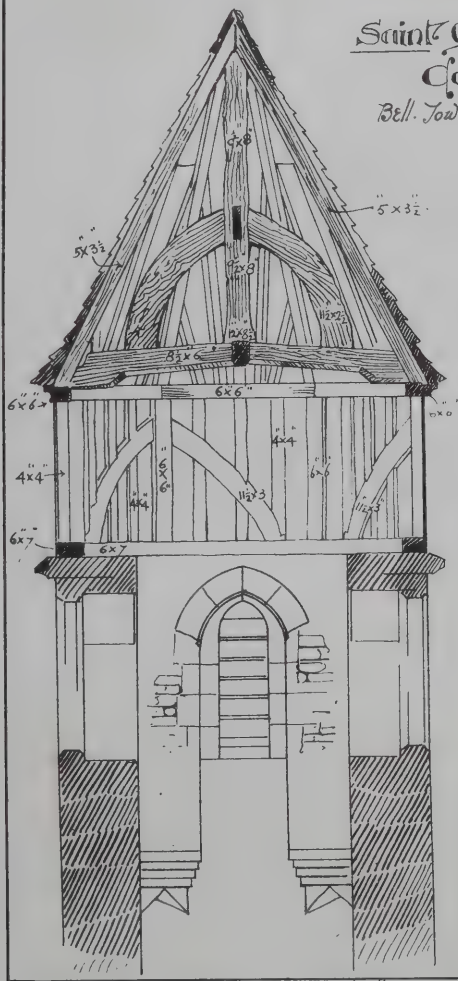
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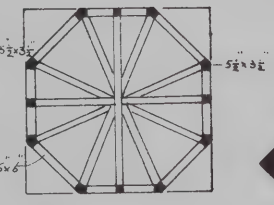


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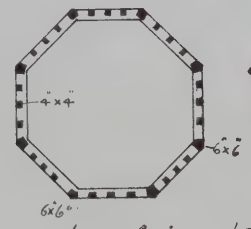
ARCHITECTURAL ASSOCIATION EXCURSION 1890

Saint Mary Virgin
Coggs Oxon
Bell. Tower Roof



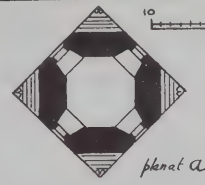


plan of rafters which only go to apex

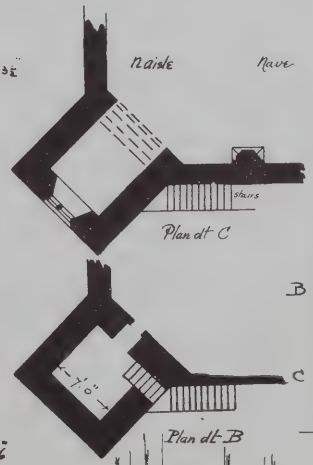


plan of trussed framing

Scantlings	
Common rafters	3½ x 5".
King Post	12 x 8½ - 9 x 8.
Struts Carrd	2½ x 11½.
Tie Beams	8½ x 6.
Plate	6 x 6.
Truss braces	11½ x 3".
Uprights	4 x 4.
Corner posts	6 x 6.
Cill	6 x 7.

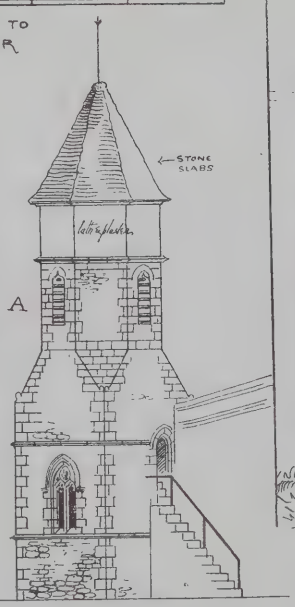


plan at a



Plan at C

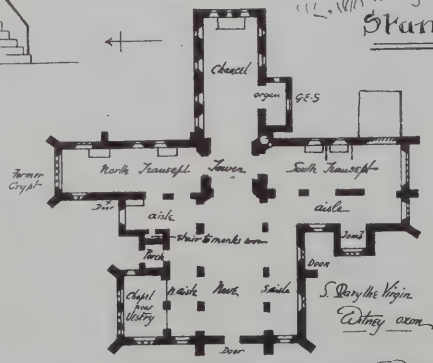
Plan at B

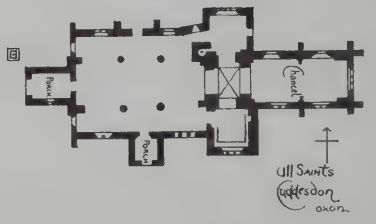


Elevation



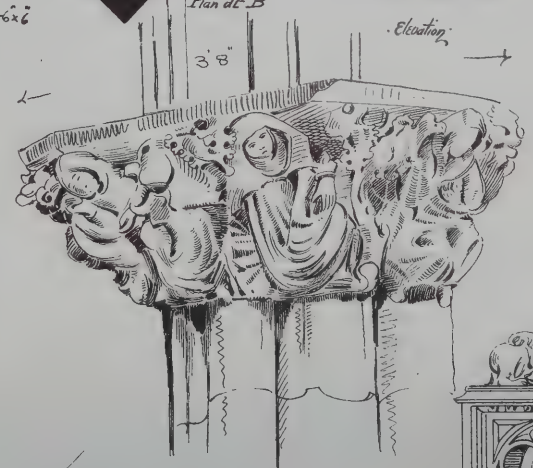
Stanton Harcourt
SKETCH OF CHURCH S.E. view



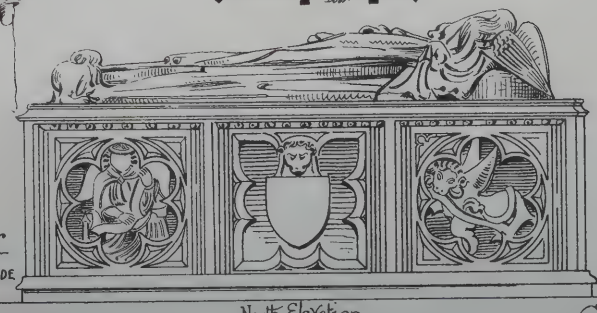


All Saints Cuxdon

S. Mary the Virgin Witney



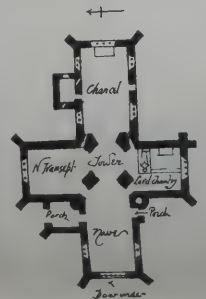
Abbey of S. Peter & Paul
Dorchester
Corbel on Pier of Western Nave Arcade



North Elevation

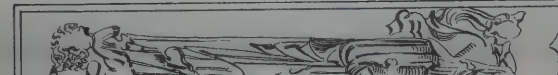


East Elevation

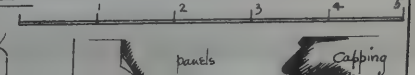








Scale



The Crossing · looking Toward Chancel

Sketch from S.W.

Lions Head from South of Templars Tomb

Details

Saint' Mary ye Virgin Cogges Oxon

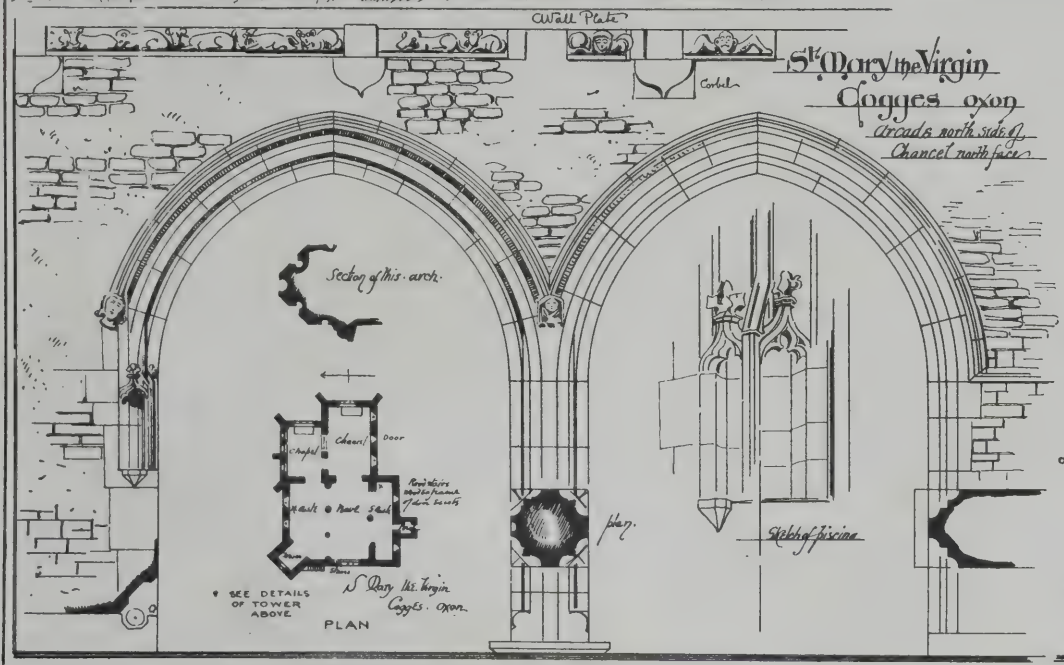
Tomb in aisle of Chancel



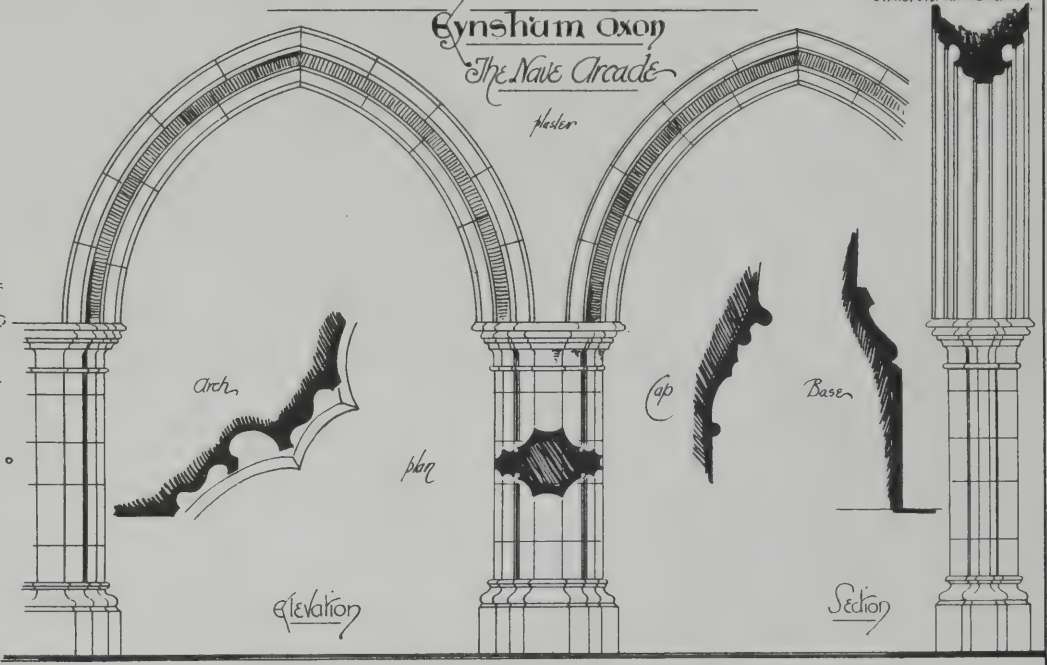
ABBOT'S KITCHEN STANTON HARCOURT oxon.



THE ABBOT'S KITCHEN in GARDEN STANTON HARCOURT



St Mary the Virgin
Cogges oxon
Arcade north side of Chancel north face



Sketches about Oxfordshire Architectural Association Excursion 1890: from pencil sketches by William A. Pite Arch.t

MAURICE B. ADAMS DELT

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BUILDING NEWS
D ENGINEERING JOURNAL.
VOL. LIX.—No. 1859.
FRIDAY, AUGUST 22, 1890.

RACTICAL ARCHITECTS.

RE is a good deal in the word practical" that appeals to most having anything to do with build- he memory of very many recalls s of edifices never completed, owing t cost; buildings whose founda- re shaky, towers half-finished, and uses which can never be healthy, to imperfect sanitary construction. asionally hear of such omissions as es, windows, and even doors, and we member public buildings, erected cost, which have dark, perplexing s, badly-lighted halls, staircases erely try the respiratory organs, and ventilated and draughty courts. s and lecture-halls of defective properties add to the long list of s which are pronounced failures. Of it is not of much use to argue architect is irresponsible for these

It is even less an excuse to call to hat these edifices, or some of them, en designed by eminent architects— high artistic powers. To the public hese mistakes of construction are nable, and no artistic skill exhibited rchitecture will for a moment atone errors. The most able art-architect, not practical, is regarded with sus- nd distrust by the bulk of those who architects; his talents and genius n order that are too transcendent or for ordinary mortals who deal in and mortar. Imaginative design, efforts in stone and marble, the ements of perspective, light and shade r, are all beyond the employer, and architect attempts to exercise his in any of these ways, he is very icked. The theoretical architect ot an individual in whom the client sed to place confidence. He is too trying new "fads" or experiments r he has the chance, often at the the client. Though he has an un- d confidence in his own ideas and s, he generally gives little satisfac- l some of his "theories" do not work practice.

ractical architect comes to his task extensive experience with building ns. The trades have been learned by quaintance with the workshop; the ment and valuation of artificer's lave given him an insight into cal methods of conversion of ma- nd the labour on them; he looks at *king-out* of designs, rather than of rtistic treatment and principles. of an abstract embodiment of ideas, ng presents, in his mind, rather a -out of various trades—a matter of brickwork and masonry, carpenter's er's work, materials and labour. It l at more from the point of view of ractor and quantity surveyor. The he constructor may be apparent, yet y of scientific construction has not empting as to lead to the display of But it is rather by the grasp of facts es that the practical architect obtains , and these we desire now to say g about. The architect whose ge of the business has been gathered ntirely from reading, study, and g, is unprepared to enter into a work- surveyor's view of building. For e, at least, he is diffident to pass an n anything so technical or practical as to the difference of cost between brick and stone, or on any matter of heating or drainage. His answers are general, and evasive of practical issues. On these points the practical architect has decidedly the advantage.

And what is the kind of preparation needed to fit a man for the practical part of the profession, and is it such that it can be acquired without compelling a young man to pass half his earlier days in the office of the surveyor or builder? We may answer that the equipment of a practical man resolves itself into a knowledge of methods, labour, and cost. What to do under certain circumstances, and the best way of performing the work cannot be learned by seeing work actually executed. The reason of such-and-such an operation is not disclosed to the inexperienced apprentice in the mysteries of the craft. Nor can he learn them from treatises. Take, for example, foundations on yielding soils. The most desirable mode of forming a foundation on a shifting soil, such as sand, by preventing the "flow" of the soil, or spreading laterally, is a principle. The architect ought to know how to accomplish it in the best way. Experience tells him that if he extends the base of his footings by grillage or piles, or by massive layers of timber, he may safely venture to build on quicksand or soils of a soft character. Or piles, supporting a thick layer of concrete, may be equally as good and less expensive. The amount of weight that a square foot of foundation will bear on such a soil must be known before any plan or specification can be made, and if the safe-bearing power of quicksand is from $\frac{1}{2}$ to 1 ton per square foot, it will be easy to determine the spread of the foundation. Speaking of foundations, the methods of increasing the bearing power of soils are several, such as increasing the depth, draining the soil, piling, compacting by stone or short piles, layers of sand, and any one of these would suggest itself to the practical man. The area required for a foundation to bear safely a given weight can be determined by dividing the latter by the safe load per foot. The weight in lbs. per cubic foot of masonry, the maximum horizontal pressure of wind, the effect of wind on towers and chimneys, square and round, are points at once grasped by the practical designer of structures, and are thought of when the foundations are being considered. The maximum pressure per unit of area on the side of the foundation which has the centre of pressure would be a necessary fact. Certain equations will give the actual pressure on both sides of the structure.

Loads, or the weights borne by floors and girders, are of necessity important data, which the architect should remember almost as well as he does his multiplication table. It may be as well to remember, for instance, that the weight of a dwelling-floor, including the movable load on it, is about 20lb. per square foot; that of public buildings 45 to 50lb. per foot; that of warehouse-floors from 150 to 200lb. per square foot. The floors of crowded theatres, churches, or assembly halls have often the same amount of weight upon them as the last. Then there are the weights of roofs for different materials and angles.

In estimating, the practical architect has considerable advantage over him who has not gone farther than the design of buildings. After all, *cost* is an important factor, and one which ordinary architects cannot afford to treat with indifference. To be able to talk about a building in relation to the number of rods or yards of brickwork or masonry, cubic feet of timber, and superficial extent of flooring it contains, is a great aid, however commonplace. To be able to look at a design as a matter of quantities and prices is to take a rather low view of the art, but it is one of essential value to the architect in practice. The art architect is satisfied if he can anticipate the ultimate effect—he looks at the design as a completed whole, he is a synthesist; the quantity surveyor, on the contrary, analyses, and to his mind the design is resolved into items of masonry, joinery, and other trades.

The knack of analysing trades is of unquestionable value; but it is a neglected branch. The data for estimating the amounts of ingredients to produce any required quantity of mortar may be mentioned. Very few are prepared with this knowledge from experience. To know, for instance, how many cubic yards of mortar can be made from a barrel of lime paste and three barrels of sand is one of the things a practical man has at his finger-ends. He knows it will make about half a cubic yard. He also knows at a guess how much mortar is required for a cubic yard of stone walling or brickwork; that in close-joint ashlar the proportion of mortar to the cube yard is only ·04, while in brickwork with ordinary joints the quantity of mortar will be ·35 to ·40 of a yard, the same as for rough rubble. The analysis of the cost of a cubic yard of mortar, or of brickwork, each depending on the quantities of ingredients or brick used is one of those mental qualifications which distinguish the practical from the theoretical man. Every locality will, of course, differ in some respects as to labour, cost of material, size of bricks; but in estimating some general data can be obtained. Thus a thousand bricks will require ·80 to ·90 of a cubic yard of mortar if laid with ordinary thickness of joint, and only ·45 to ·55 if the joints are but $\frac{1}{4}$in. thick.

The practical architect knows not only how to analyse his building into quantities, but he can specify with accuracy. How very few can do this? We know architects who get their quantity surveyors to write the specification, or even depute their clerk to copy a form and fill in the requirements. To write a specification properly a man must know not only the qualities of materials, but the methods of workmanship and labour required. How, for instance, can a specification of brickwork be written, unless the writer knows the manufacture and qualities of bricks, their composition and strength, the composition and qualities of limes and cements, bond, and the principles of masonry? Still less possible is it to write a good specification of joiner's work without knowing the market brands and qualities of timber, deals, and battens, the operations of joinery, and the requirements of good construction, in addition to the requirements of the building and special class of fittings.

The increasing number of manufactures and specialities connected with building form an important branch of the practical architect's equipment. Take, for example, terra-cotta. Up to the present time the architect has been obliged to rely on the manufactures of imperfect quality. Shrinkage in burning, delay in obtaining the blocks, twisted lines, are some of the accidents which attend this class of material. The modeller and the pattern-maker have been confined to operations which do not affect the actual results. The hollow blocks turned out of the kiln with seams and imperfections of form are filled up with concrete, which expands and fractures them. Now the skilled labour, formerly expended in making moulds, is employed in working and perfecting the actual clay block as if it were a block of stone, and by the patented improvements of Messrs. Doulton and Co. the blocks are turned out like wrought stone, ready for fixing without the "doctoring up" and chiselling to which they are generally subjected after burning. The most delicate mouldings, mullions, cornices, and tracery can be produced, and glazed to suit the surface and colour desired by the architect. The mode of manufacture which substitutes a solid perforated block for the hollow concrete-filled form, and which subjects it

to mechanical pressure while in the moist clay and to various finishing processes, has rendered it possible for the architect to use terracotta just as he does stone, to employ it for shafts and in the most delicate works without the slightest fear of its failure. Only those who take the trouble to keep pace with improved processes and appliances are able to obtain the most successful results.

INACCURATE PLANS.

IS an architect liable for any incorrectness in his plans? From the general view held amongst the profession no very definite opinion can be gathered. Errors due to negligence are not usually of very considerable moment, and are often discovered before any cost has been incurred. Extras may be allowed in some cases, as, for example, should the foundations require to be taken down to a lower level than shown on the sections, or a wall made thicker than shown on the plans. It would be absurd to contend that the architect's plans and specifications should be perfect under all circumstances, or that no deviations should be found necessary to be made from them. Hence it is laid down that an employer is not liable for mistakes in plans and specifications, no warranty being implied on the part of the employer. The case of "Thorn v. Lord Mayor of London," where the plaintiff entered into a contract with the City authorities to construct a bridge over the Thames according to certain plans and specifications prepared by the engineer of the Corporation, is cited. It was found that the method proposed in the plans of forming the caissons and foundations could not be carried out, and the contractor adopted another plan, with the consent of the engineer, and sought to recover the expenditure he had been put to in carrying out the plans. It was held there was no warranty on the part of the defendants that the plans could be carried out in all respects. This decision has perhaps given rise to an idea that the architect or engineer is exempted from any liability on this score; that as there is no warranty implied on the part of employer, therefore there is none implied on the part of the architect. But he stands in a different position in relation to the employer. He must display a "reasonable degree of skill and care," for if any damage is suffered by his employer on account of his negligence or want of skill he is held responsible. But we know that this liability is disputed by many. There is a generally received opinion that the architect does not warrant the correctness or practicability of his plans and specifications, or bills of quantities; that any errors or inaccuracies are pardonable unless they arise from fraudulent intention. Under this conviction we find clauses inserted which throw any discrepancy or mistake on the contractor, or do not hold the architect liable for errors found in any of the documents.

The law has certainly not expressed itself very clearly on the point in question. In one instance where a surveyor gave an inaccurate valuation for the purpose of mortgage, it was decided that he was liable for the loss occasioned to the firm who negotiated the advance on the strength of his valuation, the judge holding that if one supplies anything for a given purpose, he is liable independently of contract if the thing supplied is so unfitted for the purpose as to cause damage to the person using it. In this case there was no contract between the valuer and the negotiators of the advance; but the latter were losers, inasmuch as they advised their client to advance a sum of money to the mortgagor, who appointed the valuer. The bearing of this case on plans and other documents is evident. If the contractor has no case against the employer for inaccuracies in the plans and specification, he can claim against the architect for negligence or error in the preparation of documents upon which the tender has been based; also if he cannot show reasonable skill in the design or plans, or neglects to discharge his duty towards his employer, or allows improper materials to be used, he renders himself liable. These are disqualifications that a jury will have to assess at their proper value. The nature of the contract is the point that a judge and jury would take into consideration. If a client required a plan prepared for a particular purpose, and the architect failed to fulfil the intention, he would, no doubt, be held responsible; but if the plans were the joint result of employer and architect, and they did not answer the purpose intended, it is extremely doubtful whether the architect could be made responsible on the ruling in the case of "Hall v. Burke." In the majority of agreements, verbal or implied, between architects and their clients, the first-named assumption holds good. Plans and specifications are prepared for a certain building, the employer leaves the matter entirely to his professional adviser, and relies upon his skill and discharge of duty. The building is imperfect, or failure of some portion occurs owing to neglect, and the employer naturally seeks compensation or claims damages.

The importance of making a provision for errors or omissions in drawings which form part of a contract is obvious, and a clause to this effect should be included in the contract. The following is a form for one that has been suggested:—"The contractor agrees to make no claim against the proprietor in respect of any error, discrepancy, omission, or insufficiency in the said drawings, or on the ground that any portions of the works shown upon the said drawings are of unsuitable or of insufficient design, dimensions, or materials, and the said contractor agrees to supply and execute all additional materials and workmanship, if any, which may be required by reason of such errors, discrepancies, omissions, &c., and such shall be deemed to be part of the works to be done under this contract, and to be covered by the contract sum." A provision to this effect would save a great deal of after-disagreement by throwing the responsibility on the contractor, who, to protect himself, would be compelled in many cases to add a percentage for contingencies of this description, especially when the plans and specifications appeared to be hastily prepared or defective. We should rather be inclined to word the clause a little differently—to the effect that before signing the contract, the contractor should examine and compare plans and specifications, and point out any discrepancy, or omission, or insufficiency that he might discover in them to a view to their correction or explanation, no claim or allowance being made afterwards.

ARCHITECTURAL ASSOCIATION EXCURSION INTO OXFORDSHIRE.—III.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

THURSDAY'S proceedings began by a railway journey to Witney, from whence, by carriages, the excursionists proceeded at once to *Minster Lovell*, which lies to the right in a hollow below the main road to Burford. *Minster* originally was the name of the place, but the venerable priory, now in ruins, obtained its name from its foundress, Maude Lovell, in the reign of King John. Lord Lovell built his seat here in A.D. 1400. His successor, Francis Viscount Lovell, a Lancastrian, became odious to his party by taking office under Richard III., hence the rhyme which led to the execution of its author, William Collingbourne, a Wiltshire sheriff:—"The cat, the rat, and *Lovell that dog*, rule all England under the hog." He was attainted on the accession of Henry VII., but escaped and fled to Flanders. In 1487 he returned, but his fate has never been clearly ascertained. C memorandum as to finding his skeleton (a large vault underground at Minster L given in the history of the place. The house has no trace of a military charac being so entirely ruined now has little the refectory windows of immediate int the architect. The church, however, is r able on account of the central tower wh plan, is smaller than the space formed at tersection of the cross, and the chancel is n than the nave. Four piers—two entir tached and two partly so—support th inside the main walls, with which they a nected by a small diagonally-set arch case, forming, as it were, four hagioscopes views either way from the nave into th septs, and from them into the choir. The space is groined, and the effect inside is ingly elegant and suggestive. We ga sketches of the church and a plan last we Mr. Pite's sketch book. Mr. J. L. P R.A., restored the church and added th pulpit and reredos. The founder's (rich tomb stands in the south transept, and stalls remain in the nave and are admi plain examples. The tomb, though wel for in so far as further mutilation is conce in urgent need of repair, or the side tow south will fall out with the capping no loose.

Asthall, still on the road to Burford, miles from Witney, was next seen. We view of the church and manor house las taken from the farmyard to the right of t road. The church, dedicated to St. N has been rather over-restored (1884), some time or other, the floor of the nave h considerably raised, the bases of the arca being almost buried. Adjoining the ch parclose, or chantry, and underneath what coarse cinque-foiled arch. In th wall of this chapel reclines an effigy Corbett, who, in the court of Henry II., similar position to that assumed by the of Portsmouth as the paramour of the " Charles. Two lights of the window ab tomb are filled with the original glas ancient stone altar in this church occu proper position, and a shrine, or chantr in the north transept remains *in situ*. wood in pulpit is a good piece of solid work; but the sanctus bell turret is ve The cross over the porch, which fig Parker's "Glossary," is much broken church is well cared for. In the churc an altar tomb, with quatrefoils and shiel

> "Beneath those rugged elms, that yew tree's
> Where heaves the turf in many a moulde
> Each in his narrow cell for ever laid,
> The rude forefathers of the hamlet sleep.

Their resting-places are marked by some tombs, that in the centre of the God's Ac of unusual shape, of Late Renaissance styl vases along the top. Similar Renaissan exist in Burford churchyard. Sir Richa judge of the Common Pleas, lived in th House in the 17th century, in the Charles I. It was the Manor of the Fet whose grand monuments are to be seen brook Church, a mile away, with eff clining one above the other. Sir Edmu place is thereon said to have been:

> "In life and death made both beloved and d
> To God and menn, and ever famous heer;
> Blesed in soule, in bodie, goods, and name
> And plenteous plants by a most verteous

Burford, another village on the W was reached about one, when lunch wa the hospitable Bull Hotel, a rare old- hostelry, having a brick façade dating days of Queen Anne. The Priory r first seen, and here Mr. John L. A.R.H.A., took a photographic grou party. The beautiful chapel attache old mansion is very much more ruin when we saw the building five years indeed, is so far gone now, that rebuil can save it. The entire loss of so example of the English Renaissance much to be regretted, for as a specim style and also as an instance of a detach chapel joined to the house by a cl building has no equal. As a piece o work it has its faults unquestionably, curious to see how well the work together, notwithstanding the contin neglect to which the place has been su so many generations. A plan and vi

tch of the main gable of the chapel, und given in the BUILDING NEWS for r 25th, 1885, when we gave the history ce and an account of its builder. In the week before last (Aug. 8, 1890) we l Burford Church, and gave a plan of ng with a description written by the George Edmund Street, R.A. We l to find the sacred fabric still so kept. The west window has been stained glass by Mr. Kempe, who has is Jesse tree groups into large panels glass borderings running through the This has the advantage of marking rk from the old glass in the traceried the window, but the effect of the general tone of the new glass as com- h the amber colouring of the ancient ry unsatisfactory: either one without is charming in its way, but they don't ner at all well. Mr. Sedding has ntly added a plain ceiling in oak to el over the undercroft. The vicar, he aid of an architect, has care- ored the south aisle of the choir. rich in archæology and venerable in r the Synod of 685, by which Malmes- y was enhanced with extensive lands ord, in Wilts. This ancient borough cene of the battle between Ethelbald red in 752. The burgesses had a eal, and formerly possessed the right in Wychwood Forest for one day in , a right commuted in 1593 for a pair nd a fawn, formally demanded with blemnities by an elected boy and girl l from the keepers of the forest on day afternoon. The old houses of the e seen, but some have been altered. of the bridge and houses see BUILDING August 7, 1885. Shipton was passed f the party who returned to Oxford by . We give a view of the church, spire, and a sketch of the Dovecote ton Court, an Elizabethan house of rtance. Mr. Street restored the church. ford we print to-day our sketch of the ry house situated at the bottom of the t. It is a very good example, and dicate a French origin by the type of ich it illustrates. The "trippers" Witney by rail, reaching the Mitre t o'clock after a long but instructive ble day's outing.

programme opened by an exceed- sant drive through the best suburb of st Mr. T. G. Jackson's High School Mr. G. G. Scott's College buildings, left Mr. G. E. Street's characteristic SS. Philip and James to *Woodstock*, church of the parish was at once in- The sculptured E.E. caps to the south the building are the most interesting The poor Classic western tower is not , neither can it be called picturesque. Blomfield, A.R.A., rebuilt the north rcade about twelve years ago, pulling ideous Late 18th century work which figured the fabric. His east window re very fairly good, and the ancient seventy years' service as a wash-tub, restored to its proper use. The south e church and the arcade on that side outwards considerably, and would be er for a few buttresses with an arch or n over to take the thrust of the main e church inclosure is a picture of neat- he people may well be proud of their l graveyard. An old Jacobean stair- post-office was seen, and the manor- Old Woodstock close by. The ts then paid the usual fee of a ch charged to the public, and like cheap-trippers" entered the great nspect the Duke of Marlborough's magnificent house, Blenheim Palace. and clever monstrous and grand man- r John Vanburgh's biggest work, and, masterpiece. He obtained the com- rough the fame he had won by his at Castle Howard. The Palace was in 1705, and in 1714 no less than ad been paid by the Treasury, while, sum, about £60,000 were due by the ccount of the undertaking. The shell mpleted when Queen Anne died, and l monument of the glorious actions of hill, Duke of Marlborough, for whose ver the allied armies of the French and Bavarians a grateful people had determined to erect a worthy home, was ultimately left unpaid for. Parliament ignored its liability, and the projected palace was finished after Marlborough's death out of private moneys which he provided for the purpose—some £10,000 a year, which Vanbrugh said the duke had left for the duchess "to spoil Blenheim in her own way." The history of the building bristles with petty squabbles, ducal niggardliness, and malicious malpractices. Vanbrugh was very badly treated, spending much of his own means to carry on the work; he never even received his fees, while he also lost his capital, besides his salary. The duchess, that termagant "old Sarah," at last became so bitter in her treatment of the architect that she wrote an order refusing to permit him to inspect the execution of his design. Many of the workmen also never received their wages. The duke died before his house was finished. The plan of the palace itself is well known, and its architecture is unquestionably imposing, from its great size, scale, and varied outline, though excessively heavy and overladen with massive detail. The general effect gave occasion to the architect's epitaph: "Lie heavy on him, Earth, for he laid many a heavy load on thee." The house forms three sides of a square, inclosing a court, and the quadrangle is entered from the east side by an arch, decorated with an emblematic sculpture of a lion grappling with a cock. The hall extends the whole height of the building, with Thornhill's ceiling, illustrating, in an allegorical fashion, the Battle of Blenheim. This interior is exceedingly imposing, and must be acknowledged a work of taste and good proportion, in which there is a considerable reserve exhibited, considering the circumstances under which it was designed and the age in which it was built. The great dining-room is filled with pictures by Rubens and Vandyke, with tapestries illustrative of Marlborough's exploits. The furniture is rich to a degree, and the old china in the cabinets was used in the Court of Queen Anne. The saloon, with walls and ceiling—a masterpiece by Laguerre, painted in imitation of relief, is an unsurpassed work of its kind with architecture. The state drawing-room, enriched with tapestry, painted on in perspective, is less spacious, but well-harmonises with the rest; and the library, 183ft. long, occupying the S.W. front, and originally intended as a picture gallery, is an exceedingly spacious and highly elaborated apartment, containing comparatively few books. The grand new organ, to stand in the centre bay of this library, is in course of construction from the designs of Mr. Romaine Walker. A drawing of the instrument was illustrated by an elevation at the Royal Academy Exhibition, just closed. The chapel of the palace was also seen. The Ionic Temple of Diana in the private garden was designed by Sir Wm. Chambers. The new boat-house was illustrated in the BUILDING NEWS, April 5, 1889.

The church of *St. Mary Kidlington*, about a mile east of Woodstock-road, is a large cruciform building with a central tower and sleek spire. The building is chiefly Decorated in style, and has some admirable specimens of Late Gothic work about it, such as the three-light east window of the north transept with good niches for figures in the reveals inside on corbels. The cinque-foiled and ogre-headed piscina by the side shows the connection of the window with an altar. There was also an altar in the south transept under the east window with a recess for a sedile. Over the lofty nave is a Perpendicular clerestory with a contemporary roof, and, as at Coggs, which we illustrated last week, the arcade has no caps. The chancel inclines very much on plan towards the south. It contains some old plain stalls with fronts made up of ancient bench-ends. The chapel south of the choir has an extremely beautiful Decorated four-light window, with a carved man's head in the centre of the rose of the head. In this chapel are some good incised memorial slabs of simple design, with fillings of black and red mastic, dated 1665. The pulpit is of carved oak dating from Elizabeth. The absence of an aisle on the north gives an unusual elevation outside. Close to the church is a small hospital or almshouse, erected by Sir Wm. Morton, 1671; but the building is of no special interest beyond being simple and suitable.

Water Eaton Manor House, seen next, stands near the Cherwell and dates from James I. when it was built, though it looks of earlier workmanship with Tudor-like windows. The nave of the chapel is 25ft. long and the chancel 16ft. The fittings are in a Renaissance style with poppy-heads to the pew-ends; a very good screen and capital pulpit. The house to which the chapel belongs is a perfect specimen of the Elizabethan period, with its courtyard, entrance gate, and detached wing all in their original state; over the entrance is the date 1585. Lord Lovelace lived here during the Civil War, and the place must have been of some importance at one time. Now it stands over the fields away from the high road, with only a rough track leading to it, and is used as a farm-house. The building is, however, well cared for, and contains some good panelling in the large rooms. In detail the work is coarse but effective. Here, in front of the house, Mr. J. A. Robinson photographed a group of the party, about thirty in number. With Water Eaton, one of the most interesting pieces of domestic work seen during the week, closed the excursion of Friday, and an early start home was made by the coaches to be in time for the final dinner at the Mitre Hotel in Oxford. The proceedings suffered considerably from the absence of the older members of the excursion party, who in past years have contributed so much to the success of these occasions. No guests were invited, and although the usual toasts were carried with enthusiasm, there was an evident want of heartiness, which was accounted for by one speaker from Ireland as due to the "absence of so many familiar old faces which he saw around him." This bull brought down the house, but the evening was not a success. On Saturday some of the party left early, but others remained to inspect the remainder of the colleges not seen on Monday, including St. John's College, where Inigo Jones's arcaded building affords unquestionably the gem of Renaissance work within the limits of the University, and illustrates his power and refined skill as a cultured architect who had studied the buildings of Florence to advantage. We shall illustrate a drawing of one of the doorways from this college next week, from the pencil of Mr. Phené Spiers. Worcester College was also seen, with its beautiful decorations and fittings, erected about 28 years ago from the designs of the late William Burges, that Master of Gothic design. Here his work in the Renaissance shows what a genius of detail he was, and how thoroughly he carried out his labour of love, making the thought prevalent in it throughout the keynote of one vast Te Deum, working in all created things in his scheme. Time has toned the work down here as in the great hall of the same college, which he also decorated; but his art is living still, replete with personality perhaps, but as thorough and as true as the artist was himself. His glass here is the least successful part of the work he did. The gardens of this college are among the most charming in the city.

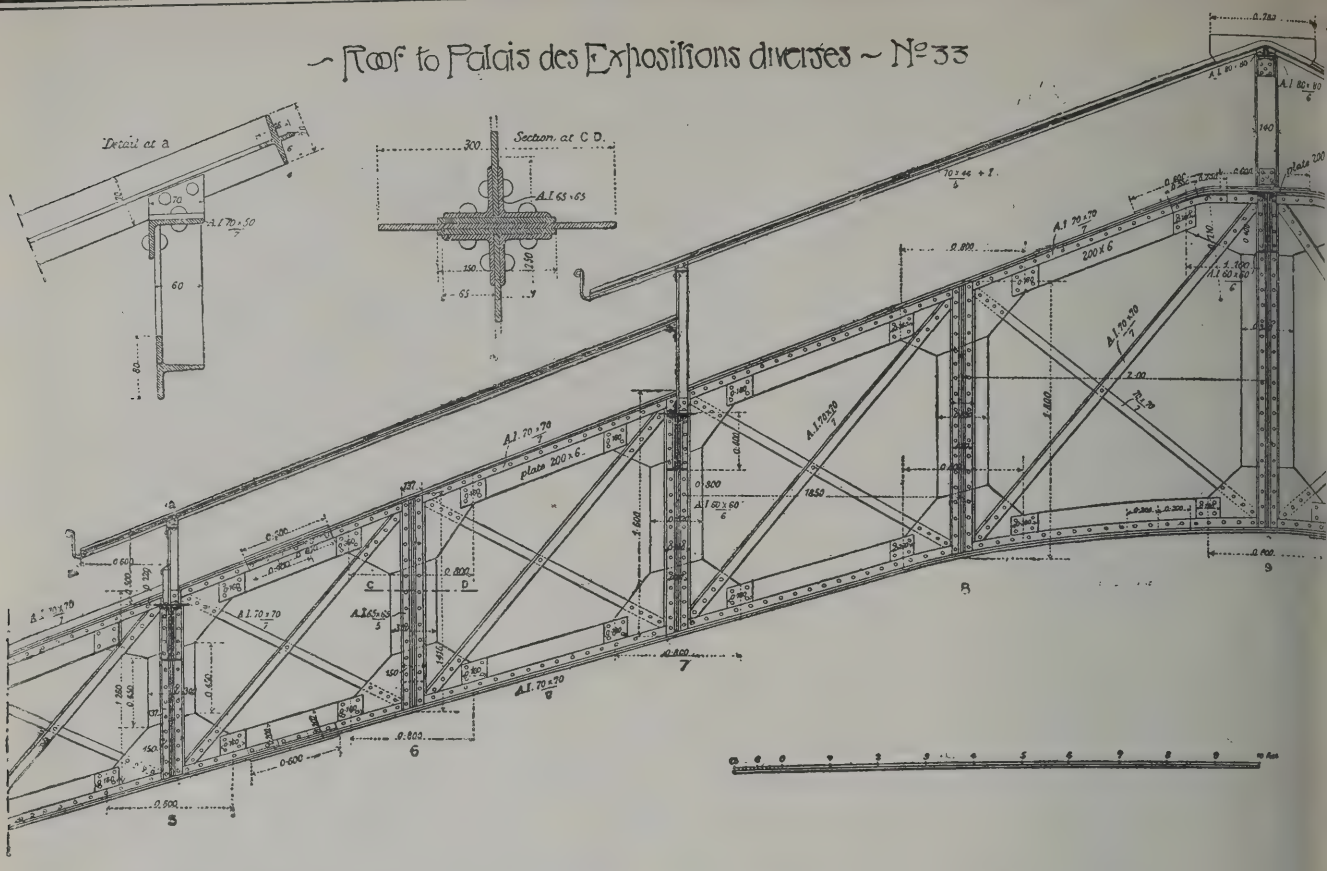
Among the accompanying sketches is a view of the Pilgrim House at Deddington, visited by the Association on the Banbury excursion. It stands close to the church, and has some nice detail about it. Inside in the tower of the house, is a curious old wooden staircase with square newels of Jacobean character, well worth a note in any architect's sketch-book. From Wroxton Church, visited on the same occasion, we give a bit of iron railing from the tomb of William Pope, dated 1631, and from Hanwell Church, an odd old English font cover, which some people managed to admire. The fittings of the churches of Oxfordshire will not compare with those of Norfolk, more particularly with those seen by the Architectural Association last year round King's Lynn; but the buildings themselves are, on the whole, far better cared for than in East Anglia, and generally speaking, the restoration work has been well carried out. The two pulpits illustrated to-day from the Latin Chapel of Christ Church Cathedral, and the Convocation House, Oxford, are shown from two admirable pencil drawings lent us by Mr. T. Maclaren.

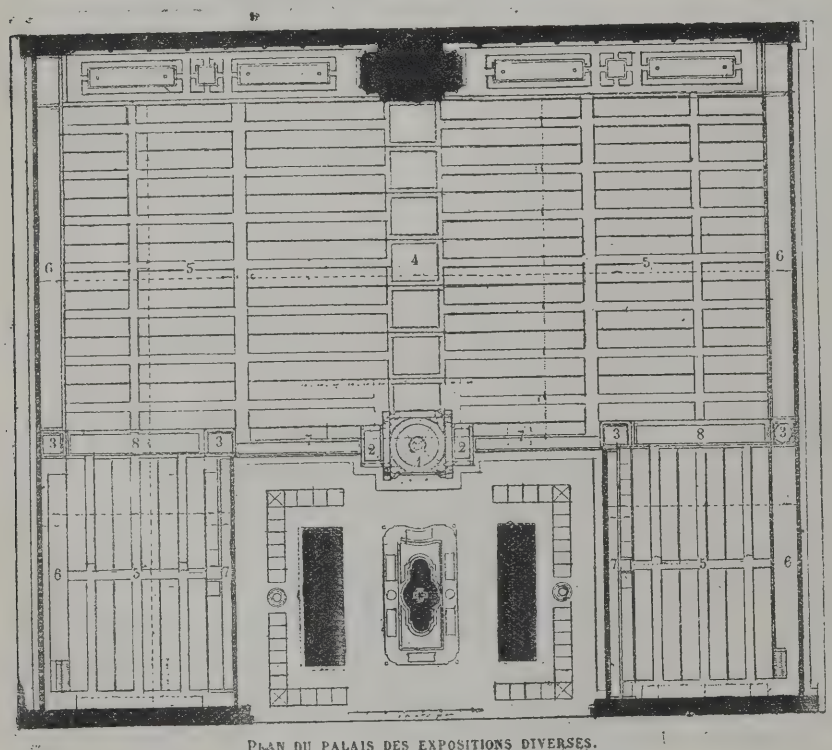
CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—X.

By BANISTER FLETCHER, JUN., A.R.I.B.A.

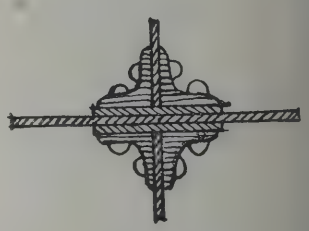
PALAIS DES INDUSTRIES DIVERSES.

THE building which has been set apart for Groupes divers Français and Groups divers Etrangers is formed of one large division and two wings, which join the Galeries Rapp and Desaix respectively. The main building is given up almost entirely to French industries, the wings



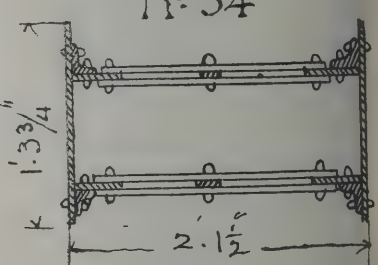


PLAN DU PALAIS DES EXPOSITIONS DIVERSES.



Sec. of upright in truss

No 34

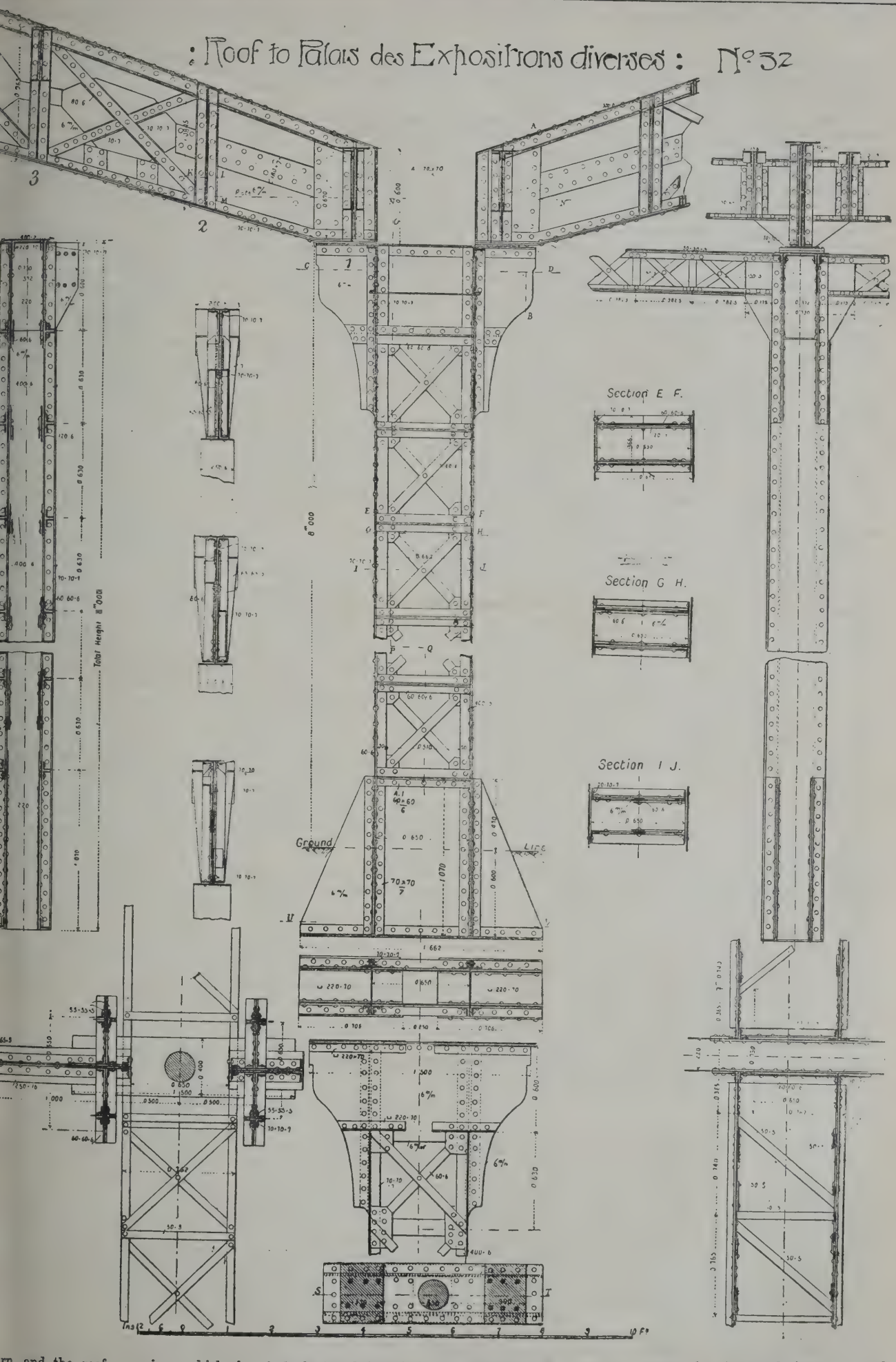


Standards to Roof

to foreign countries (see No. 31 from *L'Architecture*).

The Palais does not touch the Machinery Hall, but is separated from it by an open space, which is roofed in and now used for an exhibition of railway carriages. The main building, which extends the whole width of the Champ de Mars, is 1,344ft. long by 626ft. wide, and the wings, which are on the same central axis as the Fine Arts and Liberal Arts building, are 403ft. long by 344ft. wide. The main building is, however, divided down its centre in the central axis of the Champ de Mars by a gallery called the 30-mètre gallery, from which gallery, by entrances of different design, on which great care has been bestowed by the architects, access is obtained to all the French manufacturing industries. The main building is composed of ridge-and-furrow roofing of the type shown, of which there are seven bays running east and west on each side of the "30-mètre gallery." There are 21 intervals between the principals in each of the seven bays on each side of the 30-mètre gallery to the main division, and 16 divisions in each of the three bays to the wings. The roofs have a span of 82ft. centre to centre of standards. The main division is connected to the wings by a vestibule 49ft. in width, running at right angles to the axis of the Champ de Mars, across the centre of the central dome, with four junction domes along its length. The roofs to the wings of the "Palais des Expositions Diverses" are of the same form as those to the "Palais" itself. All round the open space in front of the Palais there are restaurants formed, abutting on the open space, with decorated terracotta friezes above the columns; these restaurants have cellars them. Considering the roofs and their su and first of all their supports, we find (see and 33 from *Engineering*) that they are iron standards, measuring about 2ft. 1½in. by 1ft with plates of the latter width ·35in. thick front, they are formed of iron lattic framing, with angle irons 2¾in. by 2¾in. by horizontal angle irons (double, see d 2·36in. by 2·36in. by ·24in., and diagona 2·36in. by ·24in., attached by gusset at the angles to the angle-irons (N These standards are 26ft. high, and are about 82ft. apart. The height fr ground to the top of the roof-truss To the top of the purlins, of which there on each side of the ridge purlin, are sect double rafters which support the heavy

: Roof to Palais des Exposition diverses : N° 32



rn and the roof covering, which is f match-boarding and zinc sheeting. ters are 1ft. 7in. apart. The venti- ffected by the upper and lower portions of the lantern being filled with ventilators. It will be seen that the roof-truss is formed of "uprights (No. 34) composed of a wide web with a covering piece on each side, and the whole riveted together by two angle-irons on each side with a plate between them. The cross bracing is composed of angle-irons bolted on each side of the web.

NOTES ON BUILDING PRICES.—VI.

By John Leaning.

It is commonly the practice in a bill of quantities, or a properly prepared specification, to define the treatment of provisional sums, in respect of packing, carriage, profit, and fixing. Provisions will be found either all together at the beginning of the specification or bill of quantities, or at the end of the particular trade to which they may be referred. Sometimes such list has at its head: "On all things for which a sum is provided, allow for packing and carriage." When no specific mention of these occur, they may properly be considered as included in the provisional sum. A clause should settle the question of trade discounts. The following will do it:

"If contractor desires a profit on any of the following provisional sums, he is to add it to the sum in each case, and such of these amounts as are not used will be deducted with such profits from the amount of contract. P.C. or net cost shall mean the net-cost after deducting from the list-price the trade discount; but not the discount for cash."

In some specifications or quantities a view quite different to that here taken is set forth, as follows: "In all cases where letters 'P.C.' are made use of in this specification, they are intended to imply the published catalogue price; and the architect shall be empowered, if he thinks proper, to order the articles of any special manufacturer to the full value of sum named."

Another mode of treatment is provided for thus: "All provisional items shall include 10 per cent. profit for the contractor, calculated on the net amount after deducting the trade discount."

In default of a definition clause, it is often maintained that "P.C.," or "prime cost," means trade list price—unreasonably enough; but the contention is often successful. In these times of close competition, many builders put no profit on provisional sums, trusting to their native ingenuity to cajole or delude the architect, or reckoning upon his ignorance of trade usage to get the trade discount. If a contractor wants profit, this is not always safe. On such an item as the following it is generally admitted that a profit will be allowed on the measured items which go to make up that expenditure, and no profit need be added: "Provide for extra works £50." Sometimes a number in trade list and list price is quoted; but a definition of prime cost is none the less necessary, for the purpose of adjustment of accounts.

THE CHARGES OF VESTRIES AND DISTRICT BOARDS OF WORKS.

The Metropolitan Vestries and District Boards almost uniformly require an application on a printed form in duplicate supplied by them, on which must be drawn a block plan of the building and drains. One copy is retained by the authority; the other returned to the builder, with the official permission. In the country the Local Board of Health generally requires a drain plan, and sometimes a fee; but often it does not. Reference to the local by-laws will furnish all necessary information, and the by-laws of some municipalities empower them to require the whole set of drawings of a proposed building to be submitted for approval. Whether the building be in town or country, the estimator should include a small charge in his estimate for the preparation of this plan. Nearly all the vestries, district boards, and local boards of health have some kind of printed regulations in some such form as the following:—

The Board of Works for the ——— District.

METROPOLIS LOCAL MANAGEMENT ACTS.

Regulations for the Drainage of Houses.

1. Every person applying to the Board for permission to execute any drainage works shall furnish a plan of the whole of the premises to be drained, drawn to a scale of 1in. to 8ft. Such application and plan shall be on a printed form to be obtained at the office of the surveyor for the parish, and must show by lines and figures the positions and sizes of the proposed drains; also the depth of the basement below the surface of the road, and all other necessary particulars. No drain is to be laid without being first approved by the Board, and before commencing to lay the same 24 hours' notice is to be given at the office of such surveyor.

2. Every part of every drain shall be laid with a fall of not less than 1in. in 4ft., and no basement is to be built lower than will admit of such fall.

3. All drains shall be constructed of good, sound, glazed, stoneware pipes, and jointed with cement, unless special patent joints or iron pipes are used; the joints must be made water-tight, and that part of the drain laid near or under the house or other building shall be surrounded with concrete.

4. The person executing such drainage works shall give notice to the surveyor that the drains are laid, and every part of such drain shall remain uncovered until such surveyor or other authorised officer of the Board, shall have examined the same and sanctioned its being covered up, such examination to be made within 24 hours after such notice shall have been given. The officer inspecting shall, if he think fit, require the person executing such drainage works to fill in the drain under the inspection of such officer. An entry shall be made by such surveyor or other officer that such examination has been made in a register to be provided for the purpose.

5. Each drain shall be cut off from the main sewer by a ventilated intercepting trap, provided with means of inspection; such trap to be marked T on plan. The opening for ventilation to be situated on that side of the trap nearest the building.

6. Every drain shall be well and effectually ventilated by means of iron or lead pipes not less than 3in. in diameter, without bends or angles if possible, fitted with air-tight joints, and shall discharge into the open air at the highest convenient point, clear of windows or other openings and of chimneys; such pipes to be marked V on plan.

7. All drain connections shall be formed with curved or oblique junctions.

8. All houses and premises shall be well and sufficiently supplied with water. The cisterns, services, supply pipes, and all other fittings shall be so arranged that it shall not be possible to draw water for drinking, culinary, or other domestic purposes from any cistern or pipe supplying a water-closet, slop-sink, or urinal. Every cistern shall be fixed in an accessible position for cleansing, and shall be provided with a close-fitting cover.

9. Water-closets shall be lighted direct from and ventilated direct into the open air. Every water-closet apparatus is to be self-cleansing, provided with an adequate flush of water and a ventilated siphon-trap connected to the soil-pipe by means of a sound and suitable joint. All soil-pipes to be constructed of lead or iron, with air-tight joints, ventilated, connected direct with the drain without a siphon trap, and a far as possible fixed outside the building. If the soil-pipe is of necessity placed inside, it must be of lead. Such pipe to be marked W on plan.

10. Waste pipes from sinks, baths, lavatories, or other such places shall be trapped at the outgo of the receptacle and made to discharge outside over gully traps. Waste pipes from cisterns and from safes shall discharge into the open air.

11. Every rain-water pipe shall be made to discharge above the water-level of a stoneware siphon gully. Such pipes to be marked R on plan.

12. Subject to the foregoing regulations, all the materials used and the workmanship employed shall be such as the surveyor shall approve, and his directions in these respects and as to the general construction, execution, and conduct of the work shall be implicitly followed.

Clerk to the Board.

Some of them also issue to builders applying for permission to build or drain a schedule of the rates they charge for the work they do. Most of the Metropolitan authorities supply and lay the drain from the sewer as far as the front walls of forecourt, vault, or house. Some only connect with sewer, and lay two or three lengths of pipe, and they all reinstate the road and footway. In the country the practice varies in all manner of ways. The usual process after application made is for the surveyor to estimate the value of drain and making good paving and road, and to inform the builder, who deposits the amount before commencing the work. If the deposited sum exceeds the expenditure the balance is returned. Generally the charges are based upon a schedule of prices, which is tendered upon periodically. The contractors work under it, being supervised by an officer of the local authority; in other cases the vestry buys its materials and employs its own workmen. In thoroughfares paved with asphalte or wood blocks, the paving is done by special con for such work, who generally have a s contract with the Board. It may be that the charge for work done by a local vestry will be about 10 per cent. beyon would cost the builder. The average ch a hoarding license is 2s. 6d. per month. vestries charge 2s. 6d. at each renewal, o not. In London, and in many provincia there is a growing disposition to refus cations for cellar-flaps, rolling ways, an and when granted it is under a special ag which treats them as temporary easem vocable by reasonable notice. The list of and district boards in London may be the "London Post-Office Directory." the work is in the country, the estimat invariably apply to the local authority fo of the by-laws before he completes his All the information about local author their charges should be carefully pres good order for future use. In making mate, some considerations will arise local powers, which will require t differing according to circumstances. quantities are supplied, the architect quantity surveyor are expected to pr the construction and arrangement req the local authorities, and all the has to do is to attach prices. quantities are a part of the contr neglect of this foresight will probab extra work, for which the builder will vide, and which must be paid for by the owner. When the quantities are supp are not part of the contract, the condit (as they might in the first case) proba prise an obligation to conform to the local consideration of them has been neglect surveyor, so as to involve extra wor builder, the surveyor would probably for their cost, and the estimator pricin might disregard them equally with case; but when the estimator is prep estimate from drawings and a specifi which such a condition appears, he s attention to anything discordant with dition and have it rectified, or the bu possibly have to do such work for When there is no condition of the estimator may, if he chooses, merely the drawings and specification accordin they express. Often he does choose th as the candid man, by drawing atten providing for the lapse of the architect, a higher amount of tender than anothe studiously ignored everything he was to notice; it is obvious, therefore, that with local by-laws and regulations is Those of the parishes and district boa practice differs from the general ru mentioned are as follows, and the ch assist the estimator; but many of th have no printed scale of charges:—

St. Olave:—

New York paving, laid per foot superfici
Roadway paving relaid and grouted, per superficial .....
Footway reinstated, per foot superficial
Concrete, cubic yard .....
Cartage, per load .....

St. Marylebone:—

York paving relaid, per yard superficial
Granite pitching ,,
Concrete ,,
Wood paving ,,
Macadam ,,

The vestry makes the connection and lays the drain between it an charging the cost of the work with of ten per cent.

St. George's in the East:—

Reinstating footway, per foot superficia
New paving and laying ,,

Greenwich.—New gratings or flap ways not allowed; but, subject t vertical flaps below stall-boards a inwards are allowed. Deposit for sc each house front, £1, returned if wo factorily reinstated.

Battersea.—License for hoard.....

Charlton, Eltham, Kidbrook, Lee, stead.—The practice as to drains is In Lee and Plumstead the auth on doing the work themselves. In ing sections of the district the su their discretion as to whether the d

lder shall do it, and, if the latter, under
n.
orge's, Hanover-square. — The parish
drain with sewer, inserting flap-trap
engths of pipe at the following rates :—

in.....	15s. 0d.
in.....	19 0
in.....	26 0

er digs and fills in.

m.—
loarding license..... 5s. 0d.

n, Hampstead :—

	s.	d.
ravel at per yard superficial	1	3
lacadam ,, ,, ...	1	9
ranite paving ,, ,, ...	2	0
o. on concrete ,, ,, ...	4	0
-Pebble ,, ,, ...	1	0
ork relaid ,, ,, ...	1	6
ork new and laying at per yard superficial.....	9	0
erb relaid per foot run	0	2
ar paving per yard superficial	5	6
sphalte ,, ,, ...	8	6

.—The vestry supplies and fixes flap
engths of pipe at the following rate ;
rs does the remainder under supervision
nd fills in :—

	s.	d.
with sewer and one length of	9	0
with sewer, one length of pipe, trap	13	0
with sewer and one length of	10	6
with sewer, one length of pipe, trap	16	0
with sewer and one length of	14	0
with sewer, one length of pipe, trap	21	0

orth (including the parishes of Clapham, Streatham, Tooting Graveney, and h).—
Hoarding license, 5s.
—In dedicated roads the district board
ain from sewer to front of building,
ated roads it makes the connection
only. For pavement lights a charge
oot sup. is made in respect of the area
occupied by the lights.

-in-the-Fields :—

	s.	d.
d carriage-way, per yard sup.....	2	0
d footway	1	6
d curb, per foot run		2

	£	s.	d.
g, per 100ft. sup.	2	0	0
sup. yard.....		1	0
er sup. yard		1	6

.—No fee for hoarding ; contractor
te roads and footway ; but if not satis-
ne the vestry does it and charges him
st. A charge of 7s. 6d. per house is
ll new houses. The vestry provides
making connection with sewer and
le, but the owner of property pro-
terials.
, comprising Limehouse, Ratcliffe, nd Wapping. — The district board
ewer, puts in brick-ring, and makes
rts junction to existing pipe sewers.
r does all digging, supplies and lays
lls in.
Old Town.—The vestry makes con-
erts flap-trap or junction, and two
ipe. The builder lays remainder of
and fills in.
The vestry puts in flap-trap and two
ipe. The builder lays remainder of
and fills in.
's-in-the-Fields.—As last.—Charges

	s.	d.
d two lengths of pipe 6in.	18	0
Do. 9in.	20	0
Do. 12in.	25	0

and St. John, Clerkenwell.—As last.—
ollows :—

	s.	d.
d two lengths of pipe 6in.	21	0
Do. 9in.	25	0

s, Westminster.—As last.

	s.	d.
d one length of pipe 6in.	14	6
Do. 9in.	18	6
Do. 12in.	25	0

(*To be continued.*)

ARCHÆOLOGY IN INDIA*.

THE work of the Archæological Survey has made good progress during the year, though it is to be feared that the retirement of the Director, Dr. James Burgess, C.I.E., may check the advancement of this important work. I believe, however, that good arrangements have been made for carrying on the surveys now in progress, and that Dr. Burgess will continue to edit the reports. The first volume of the new series of reports, brought out in India under Dr. Burgess's superintendence, of the Archæological Surveys in the N.W. Provinces and Oudh, containing Dr. Führer and Mr. Edmd. Smith's report on the Sharqî Architecture of Jaunpûr, which was alluded to in last year's address as under preparation, has been published. It is a valuable contribution to the history of Mohammedan architecture, and in point of get up may fairly be said to compare well with similar publications printed in Europe. In a valuable paper read before the International Congress of Orientalists, held at Stockholm, Dr. Burgess has given an account of the rise and progress of archæological studies in this country, and of the work of the Archæological Surveys in Northern, Western, and Southern India, and the publication of the results so far as issued. The materials on hand are very considerable and most important, and four volumes could be put in hand at once, were the means forthcoming, as it is to be hoped they will be. From the paper it appears that with Dr. Burgess's retirement the five survey circles for all India are to be reduced to three, under properly qualified surveys, with one or two specialists for epigraphy. The munificent aid rendered by the Mahârâjâs of Barodá and Jeypore, in bringing out illustrated works on the architectural remains in their territories, is specially noticed, and the hope is expressed that others may follow their good example. The architectural section of the Archæological Survey, North-Western Provinces and Oudh Circles, under Mr. Edmd. W. Smith, from January to April, 1889, made a complete survey, including plans, elevations, sections, and details: (1) At Orchhâ, near Jhânsî, of the splendid temple Chaturbhuj, Bîr Singh Dêo's tomb, the fine massive entrance gates leading to the palace, and a fine bâoli on the banks of Betwâ, as well as of another at Chardvârî, four miles distant from the city; (2) at Lalitpûr, of the Bânsâ Masjid, part of an old Hindû temple; (3) at Dêogarh on the Betwâ, in the Lalitpûr district, of the Gutpa temple in the plain below the fort, and the extensive group of Jaina temples inside the deserted fort. Since October, 1889, the architectural section has been at Fatehpûr Sîkrî, near Agra, and has at present fully illustrated the Panch Mahal, Miriyâm's Kothí, or house, and Díwân-i-Khas, or council chamber. Dr. Führer, after having closed, in the middle of February, 1889, his excavations at Mathurâ, which yielded, among other valuable relics, some very important Jaina inscriptions of the Indo-Scythian period, joined the architectural section and visited the Lalitpûr district. A careful search along the banks of the Betwâ at Dêogarh brought to light several Gupta rock-inscriptions, hitherto unknown. In the beginning of November he started a tour near Farrukhâbâd, Mainpurî, Agrâ, and Mathurâ districts, and is at present engaged in a complete excavation of the Kankâlî Tîlâ at Mathurá. To the east of the Svetâmbara temple of the first century, whose foundations were disclosed last year, Dr. Führer unearthed a well-preserved brick stûpa of 18½ft. diameter, some 25ft. below the present surface of the soil. This stûpa—it appears from an inscription found on the spot—is the relic stûpa which was standing inside the Upagupta monastery, mentioned by Hiuen Tsiang. Vol. I. of the Reports of the Archæological Survey in the North-Western Provinces and Oudh.—"The Sharqî Architecture of Jaunpûr," by Dr. A. Führer and Mr. Edmd. W. Smith, already noticed, was issued in August last; Vol. II.—"The Monumental Antiquities and Inscriptions in the North-Western Provinces and Oudh," by Dr. A. Führer, will be published in March next; Vol. III.—"The Chandella Architecture of Bundelkhand," by Mr. Edmd. W. Smith—is now in the press. The Archæological Survey party in Western India, under Mr. H. Cousens, having completed the survey of Bîjâpur, moved to Pâlitâna, in Kâthiâwâd, and completed the survey of the Jaina temples which crown the sacred hill of Satrunjáya. There is very little that can be called ancient, but the vast congregation of temples and shrines which crown the hill makes the place unique and worthy of attention. The whole ritual of Jaina worship may be seen on the hill, and a complete knowledge of its iconography can be gained by a close inspection of its hundreds of images. During January and February last, a Buddhist stûpa, situated in the forest near Junagadh, was opened by the Junagarh authorities under the guidance of Mr. James Campbell, C.S., and the searchers were rewarded by the discovery, about the middle of the mound, of the relic, with its inclosing caskets of stone, copper, silver, and gold. The nature of the relic has not been decided—it is a small chip, or flake, about ⅜in. long by ¼in. broad, of some brown hard substance which closely resembles stone that has been under the action of fire. No inscription or coin was found that might have thrown some light upon it; but fragments of a Buddhist rail and umbrella in stone were unearthed during the excavation. Mr. Cousens has favoured me with a copy of the report of this find, which, I hope, will be published in the Journal. A considerable number of drawings, photographs, and facsimiles of inscriptions were made during the field season. The guide book to the ruins of Bîjâpûr, by Mr. Cousens, to which reference was made last year, has been published, and is a handsomely got-up little volume, which will be of great assistance to visitors to the ruins and to archæological students. The party is now in Gujarât, visiting the outlying parts of the Barodâ territory, in order to complete the material required for a second volume on the antiquarian remains in H. H. Gaikwad's dominions. A volume on the Chalukyan remains in the Kanarese country is now almost ready for the press, and the full accounts of Bîjâpûr and Satrunjáya are to follow, they being now in hand. The Archæological Survey, Southern India, during the last field season, under Mr. A. Rea, after visiting Pulicat, Nellore, and Juvaludinne, resumed excavation at the Franguladinne stûpa, near Pedda Ganjam, as noted last year. Proceeding thence to Chezarla, some very important and interesting remains of the Early Buddhist period were discovered. They include some important inscriptions on marble and a Buddhist structural chaitya, the largest and most complete of the four yet found in India, of which three were discovered by Mr. Rea. The temple is quite complete and is used for worship by the Hindûs. Some remains were inspected at Kamapalle and some mounds at Bamdem. At Garikipad Agraharam a mound was excavated, and an early Buddhist stûpa was found, with a large number of archaic marble sculptures. It is one of the most ancient as yet discovered in the Madras Presidency, dating from about, or before, the Christian era. After visiting an old mound at Ochchampet, Mr. Rea returned to Amrávati and resumed excavations at the stûpa. Remains of outlying buildings in connection with the great stûpa were dug out, and a number of other marble sculptures, relic caskets, coins, and other objects found. From Amrávati, Vaikanthapuram and Pedda Naddur were visited, and at each place unknown Buddhist remains were found on the hills. On a hill at the latter place a most important discovery was made of the stûpa and monastery, which is mentioned by Hiuen Tsiang as being near Amrávati, and has hitherto been sought for in vain by archæologists. Excavation was then resumed at Gantupalle; some sculptured relics and a miscellaneous collection of objects were found. An excavation in one of the largest of the mounds brought to light a large and very complete Buddhist chaitya, with some unusual arrangements of plan and some curious brickwork in its construction. Some marble statues were found in it. It is a very important addition to the few Buddhist structural temples which have as yet been discovered. It is satisfactory to know that measures are being taken for the proper conservancy of the interesting remains in the Krishna district, and a very complete report of them is under preparation. The mounds have been catalogued, and orders issued for their conservation. Since the above address was delivered Mr. Edmd. W. Smith has surveyed, in detail, the splendid apartments erected at Fatehpûr Sikrî for the Turkish Sultana's use, casts of which are in the South Kensington Museum. During the next cold season Mr. Smith

* Extract from the Annual Address and Review delivered by the President, Col. J. Waterhouse, Assistant Surveyor-General of India, to the Asiatic Society of Bengal.

returns to Fatcepûr Sikrî, and proceeds with the survey of the city, which, as students of history will remember, was erected by the great Akbar during the years 1556—1605 A.D. Besides preparing drawings and reports on the architectural remains in and around Fatehpur Sikrî, Mr. Smith has taken a number of photographs and prepared casts of the detail ornamental façades. Hitherto we at home have been ignorant of the existence of a such useful and interesting department as the one lately reviewed by Col. Waterhouse in his address to the Asiatic Society of Bengal, but we hope from time to time to be able to record its labours and researches in our volumes, as we are convinced they will throw additional light upon the past architecture and history of one the most interesting and oldest countries in the world. It is gratifying to see that the Government of India is encouraging the study of ancient architecture and archæology, and it has decided to retain at least three out of the five circles employed on its survey operations.

CONTEMPORARY ART WORKERS AND MANUFACTURERS.

WE give to-day another sheet of portraits of living art workers and manufacturers.

Mr. Herbert Paul Williams, whose portrait occupies the top left-hand corner of our sheet, is the present senior partner of the firm of Pilkington and Co., Asphalte Manufacturers and importers; he is the son of the late Mr. Michael Williams, whose death we recently recorded, and was born in March, 1860. He commenced his connection with the firm in 1875, three years before the death of its founder, the late John Pilkington, the patentee of the well-known and extensively used system of asphalte roofing, combining the use of asphalte and felt, and also the sole manufacturer of "Polonceau asphalte" since 1838, when he commenced business in London. Previously to that he traded largely in asphalte in Liverpool. On his decease in 1878 the business devolved entirely on Mr. Michael Williams, who for 28 years had acted as managing partner. Of late years a great demand having arisen for a material suitable for paving, etc., which will resist the action of all acids, Mr. H. Neal Williams assiduously set to work, and calling in the assistance of a well-known chemist, after infinite labour and disappointment, at last succeeded in satisfactorily solving the problem, and placing in the market what is known as "Pilkington's Acid Resisting Asphalte," which is now very extensively used in laboratories, acid tanks, in the battery rooms of the electric-light stations, and elsewhere. Space will not permit of our giving at all a representative list of the places where the firm have laid their asphalte during the fifty-two years they have been in business in London, but we may mention the following as examples, viz.: St. Thomas's, St. Mary's, South London Ophthalmic, Evelina Children's and Stockwell small-pox and fever hospitals; Glamorganshire, Gloucestershire, and Kent-second county lunatic asylums; Stoneyhurst College, Salford; National Safe Deposit, London; Duke of Rutland's, Belvoir Castle; Baron Rothschild's, Waddesdon; Lord Sefton's, Croxteth; Marquis of Ailesbury's, Savernake; Lord Derby's, Holmwood; Colonel North's, Eltham; Carlisle Corporation Markets; Church of St. James, Spanish-place; new Council Chamber; Mayor's Court, Guildhall; Billingsgate Fish Market; Aylesbury Dairy Company, Bayswater, &c. The latest addition to the firm's trading operations has been the establishment of a branch for the supply of bricks, cements, slates, piles, terra-cotta, &c., which is under the immediate supervision of Mr. E. Graham Williams, who entered the firm as partner in March last.

Mr. John T. Bolding, whose portrait we give in the centre of the first row on our sheet, is proprietor of the establishment of John Bolding and Sons, Grosvenor Works, London. This business was founded by the grandfather of the present proprietor in 1822, and for many years afterwards carried on by his two sons, Messrs. Thomas Edward and John Lupton Bolding; the latter took his son, the subject of our notice, into partnership in the year 1868, and retired from the business in 1879, and is now nearly 80 years of age, enjoying excellent health and the rest he so well deserved. When the necessity for improved sanitary arrangements in our dwellings was introduced, this firm came to the front, and designed many improvements in the manufacture of water-closets, baths, and lavatories, and combined with these the good work, sound material, and excellent finish for which the firm was noted over half a century ago. The great disadvantage the present proprietor has had to contend with has been to get premises large enough in the neighbourhood of South Molton-street to meet his increased trade, consequently he has had to manufacture his goods in eleven different works. This difficulty has now been got over by the handsome block of premises being erected in Davies-street, within 10ft. of the present South Molton-street works, where the business was founded in 1822. A drawing of the premises is now being exhibited at the Royal Academy, and was illustrated by us in our issue of June 27. These premises, when completed, will contain over 30,000 superficial feet, and at Christmas next arrangements have been made to move eight of the eleven factories under this roof; the only works to be then carried on outside the new premises will be the brass foundry in Euston-road, the iron foundry in Birmingham, and the pottery works in Staffordshire. Mr. Bolding is assisted in his large establishment by a very able and painstaking staff, nearly all of whom entered his service as boys, and have grown up with the business; hence the harmonious way the work is carried on. A great number of the mechanics have been many years in the works, and after a certain number of years' service they have the privilege of introducing a son, who works with his father until he is efficient, when a place is found him in the factory. One of the most important advantages Messrs. Bolding and Sons' new premises will afford is the show-room, where an architect will be able to see on one floor every design in sanitary manufactures, from the ventilating cowl at the top of the building to the intercepting chamber in the area. The photograph is by Mr. Alexander Bassano, of 25, Old Bond-street.

Mr. William Lindsay, the third of to-day's series of portraits, is the head of the firm of William Lindsay and Co., 23, Queen Anne's-gate, Westminster, and patentee of the fireproof flooring, steel star stanchions, Acme steel decking, and other inventions of an engineering and mechanical nature, which form the specialities of this firm. The two first mentioned are of the most import to the building profession. Mr. Lindsay's tubular fireproof floor is made, as most of our readers are aware, of hollow rectangular bricks, made of fireclay, and fitting between rolled joists. The bricks key one into the other, to make a rigid block, and have dove-tailed grooves top and bottom to bind to the concrete and plaster. They are very light, and can therefore be laid very quickly. There is also provision for entirely incasing the joists and girders, thus forming one of the lightest and safest floors which can be constructed at a moderate cost. A special feature is the use of these bricks for building partitions, as, on account of the hollow spaces in the bricks, the wall are rendered both fire and sound proof. The new steel star stanchions are a great advance on the old-fashioned columns, saving one-half to two-thirds of the weight and space, and are infinitely superior in appearance. They can be used in continuous lengths from top to bottom of a high warehouse. Although space does not permit of a detail list of Messrs. W. Lindsay and Co.'s present contracts, we may state they are supplying the floors and ironwork at the London Hospital (new addition). They are also erecting large granaries at Bristol, with floors exceeding an acre in extent, and are providing their stanchions throughout.

Mr. William Letheren, founder of the present firm of W. Letheren and Sons, Art Metal Workers, Vulcan Iron Works, Cheltenham, whose portrait is placed at the lower left-hand corner of our plate, was born in 1833. In the year 1868 he competed for the Society of Art Prizes, and was successful in obtaining the highest possible award for a wrought-iron panel for a screen, which was afterwards purchased by the Committee of Council on Education, and placed in the South Kensington Museum. He was among the first to introduce the manufacture of that delicate and highly artistic wrought-iron work, which possessed as its special feature the faithful representation of real natural flowers and foliage, and which, for interior decoration, was exceedingly well adapted, and lent itself successfully as an embellishment to all kinds of objects—such as candle, gas, and electric fittings. Numerous exam his own handiwork in this art of delicate fo and leaf-beating are to be found in various of the country, although not always accessi the general public. By keeping pace wit times, adapting himself, and regulating a staff of skilled workmen to meet the vari ever changeful demands of public tast fashion, he gained a considerable reputati his art; and there are at the present time a number of men in various localities— especially in London—who owe their succe great degree to the instruction derived fr tuition and guidance. It would be impossi give anything approaching a complete list public and private work carried out by M Letheren; but we will mention a few example the elaborate wrought-iron balustrade for the grand staircase at Meaford Hall, Sta shire, and also the coil case panels in the O room for the Right Hon. Lady Foreste hammered iron and brass screens and ga dants at Christ Church and All Saints' C Cheltenham; all the electric pendant brackets of delicate forged work, an wrought-iron gates, Beckford Hall, near Te bury; the entrance gates and railin Abberley Hall and also of Overbury Cour coronas and brackets, and entrance ga Hastings Municipal Buildings and New the massive wrought-iron tomb railing rounding the monument of the late Ra Kolaphur, made for the Government of Bo restoration of the old entrance gates and f at the Guildhall, Worcester. About three ago Mr. Letheren admitted his two son partnership with him, and an extension business was rendered necessary by the inc demand for all classes of work, especially hammered iron electric fittings and other specialities. A large amount of work of description is being executed at the Chelt manufactory at the present time, one imp commission being the elaborate wroug gates to be fixed at Goodrich Court, He shire, the residence of Mr. Moffatt. Thes are nearing completion, and measure 25f by 16ft. wide, and are composed of worked scrolls, beaten leaves, and sus festoons of fruit and flowers; the gate illustrated in the BUILDING NEWS a sho ago. Mr. William Letheren is a member Society of Arts and an Associate of the of Architects.

Mr. S. King-Church, the fifth on t sheet, the managing director of the Staffordshire Blue Brick Company, L and owner of the freehold estate on that Company's celebrated "Cakemore Brick Works are situated, comes lineage which (under the old family n "King," the addition of "Church" name having been made some years ago nection with a property left to his father condition) has been better known military than the mercantile world, his two brothers having both been distin generals in the English army, while he was born in—and dates his earliest recol from — the Tower of London, whe father then held an important post Ordnance Office. He was educated at th giate School at Southwell. His ma experience, has, however, been more th merchant than of a manufacturer, and been as the head and the moving s this undertaking that he has broug business to its present magnitude and The manufacture is a peculiar one, almost unique in the engineering and world; and, under the able and active m ment of Mr. King-Church, has attain dimensions that already upwards of 80,00 bricks, pavings, copings, and other simil have been sent out from the works to all the world; and, with the additions already extensive works now going made, they will be brought up to the e capacity of 100,000 bricks per worki The blue marls and clays which Mr. Church has fortunately proved to exist tically inexhaustible quantities on the es he purchased in 1884, then intending to as a colliery, are of peculiarly excellent and form the sole ingredients (nothing el mixed with them) for the manufacture have now become celebrated under the tion of "South Staffordshire blue

cks," and which are now very generally cified by the engineers under that heading in important contracts. They are indeed now tensively used all over the world for railway l canal platforms, tunnels, bridges, copings, rbings, stable-pavings, and for sewer works; also for the foundations, buttresses, and other portant portions of all buildings in which the mense resisting strength that these manufac- es give are required, which great strength, nbined with their being impervious to damp l to acids, imperishable and indestructible, nstitute their great value, and there is no doubt t their use is daily becoming more and more neral. Mr. King-Church, who has already ne so much to spread the use of this material, quite lately designed a new use for it in con- tion with the laying of the wires for electric hting and other purposes, which, now that the tem of overhead wires is doomed, becomes a st important question. It is in connection h this that Mr. King-Church has just taken a patent for constructing in this material nich he claims will never rust or wear out) a verly-designed cavity which can be so placed ler the street-kerbings as to contain the wires v being so generally laid under the streets in our great towns, in such manner that the es can be got at from time to time for addi- ns or repairs thereto, without that constant turbance either of the roadway or pavement ich is now so injuriously affecting the carriage l cart traffic, as well as the comfort of foot- sengers.

Mr. Roger L. Lowe, whose portrait is last on our sheet, commenced business as retary and general manager of a large mical works, and the chemical knowledge n acquired served him in good stead in after . He began his speciality business in cement crete, granite face and fireproof floor con- uction, British and foreign asphalte, and od-block flooring sixteen years ago at Farn- rth, Bolton. Since then he has had large nent concrete contracts, in the erection of ton-spinning mills, warehouses, railway ions, hotels, markets, town-halls, and many blic buildings. Amongst others, the Birken- d Town Hall, Exchange Railway Station and tel, Liverpool; the Crewe Cattle Market, rkhouse at Burton-on-Trent, Belper Hos- l, the Nicholson Institute, Leek; the Rain- and Lancaster Asylums, and Liverpool Cor- ation Artisans' Dwellings. In asphalte, Mr. ve has rendered watertight large underground rvoirs in the red sandstone for the St. Helen's poration; many mill roofs, &c.; also laid carriage-ways and footpaths for some miles promenade extensions at Southport and er places; also rendered watertight rail- arches, bridges, &c., for miles of new ways for the London and North-Wes- n Railway Company, the Midland Railway mpany, the Lancashire and Yorkshire lway Company, &c. It was chiefly through knowledge he acquired when engaged the chemical trade, that Mr. Lowe was bled to bring out his patent for securely ening his patent wood-block flooring. This ness has been an unqualified success, and nlarging every year. The patent flooring been laid in 171 churches and chapels, 117 ges and schools, 109 warehouses, &c., 67 n halls and libraries, 48 hotels, &c., 34 hos- ls and infirmaries, 25 banks, &c., and 14 of Majesty's new Post-offices. Amongst other es the patent flooring has been laid at the ichester Jubilee Exhibition, the new Scotland- l Police Offices, London; the Liverpool Corn hange, the Sunlight Soap Works, the Ex- nge Station, Liverpool; the Mersey Tunnel way Booking Halls, Liverpool; Bream's- ildings, Chancery-lane, London, &c.

BOOKS RECEIVED.

ie Centrolinead Applied to Perspective Draw- by E. MacDougall (London: Lawrence rt and Co., 149, Queen Victoria-street).— is a very serviceable little book for the ent of perspective who requires to use the rolinead. Hitherto that very useful appliance been a "sealed book" to many, and some le-of-thumb" method has been resorted to. arm of the instrument is often set to a rent angle to the other arm relatively to the . Mr. Macdougall explains the theory of nstrument, which is founded on Euclid III. 31, and gives some very easy directions for setting it to two given converging lines, after which he gives examples of its application to various stages of perspective drawing. No intelligent draughtsman can fail to understand the manipulation of the instrument after perusing this little book, and we therefore recommend it. The diagrams are clear.——*Electric Light Fitting*, by John W. Urquhart, Electrician, with illustrations (London: Crosby Lockwood and Son), is a handbook for working electricians and engineers. Mr. Urquhart has endeavoured to divest his work of mathematical symbols, and has consulted only the requirements of working engineers. The author's work is chiefly devoted to an explanation and discussion of the branches of fitting and "wiring." The author assumes preliminary and elementary knowledge on the part of his readers, and goes at once into facts and methods. Central station work, giving notes on management of dynamos, and suggestions; the faults due to defective insulation or conduction, tests for leakage, repairs to the armature, hints about accumulators; the switch-board, running "in series" or "shunt dynamos in parallel," are considered. Arc lamps in "parallel," trimming; arc lighting circuits, running "leads"; wiring for incandescent lamps, according to the "parallel" and "series" multiple, three-wire and multiple series systems —are clearly explained and illustrated, and some useful remarks are furnished on the wiring of buildings. The work is essentially practical. ——*The Electrical Engineer's Pocket-book*, by H. R. Kempe, M.Inst.C.E., &c. (Crosby Lockwood and Son), is a valuable compendium of formulæ, tables, data, and rules required by the practical electrician. The work is in a convenient form for the pocket, and is concise, well printed, and illustrated. No electrical engineer should be without a copy.——*Transactions of the National Association for the Advancement of Art*, held at Edinburgh, 1889, (London: 22, Albemarle-street), is a bulky volume of nearly 500 pages, containing the presidential addresses and papers delivered and read at last year's Art Congress. The work is well printed. The excellent sermon by the Rev. Robert Flint, D.D., on the "Good and Perfect Gift of Art," is given. The presidential address of the Marquis of Lorne introduces the reader to the different sections presided over by various eminent masters of their respective arts. The section of Painting includes the papers read by Briton Riviere, R.A., G. F. Watts, R.A., J. E. Hodgson, R.A., John C. Horsley, R.A., William Hole, R.S.A., W. F. Yeames, W. D. M'Kay, R.S.A., W. B. Richmond, A.R.A., and J. Lawton Wingate, R.H.A., on various subjects relating to the art. "The Failure of Results of the Government Art Schools," by J. E. Hodgson; "The Methods on Oil Painting"; and "French Impressionism," are the most interesting of them. The section on Architecture contains the address by Dr. Rowand Anderson, president, also papers by David MacGibbon on "Scottish National Architecture," and one or two other interesting papers on mouldings and architectural education. The section of Applied Art, presided over by William Morris, includes his address and some papers by Walter Crane, J. Starkie Gardner, Thos. Bonnar, and Dr. Haycroft. The combined meetings contain one or two able papers on the Value and Function of Texture in Art, by Geo. Simonds, and as a Quality of Art and Condition for Architecture by Edward S. Prior. Finish in Art, by A. Roche; Municipal Legislation with reference to Architecture, by Sir James Gowans; Influence of Public Authority on Street Architecture, by Thos. Blashill; Some Sources of Expression in Architecture, by J. D. Sedding; and Practical Artistic Co-operation, by John Honeyman are other valuable papers printed, reports of which have appeared in this journal. ——Parts 19 and 20 of *Ipswich, Past and Present* (Ipswich: W. Vick) contain half a dozen mounted platinotypes, including two views of Archdeacon Pykenham's Gateway, an interesting specimen of crow-stepped brickwork, and of half-timbering, built in 1460; a 17th-century chimneypiece in the "Half Moon," of wainscot, carved with two relief arabesques; the Council Chamber in the Town Hall, designed by Messrs. Bellamy and Hardy, of Lincoln, in the Venetio-Gothic style of 1865; and rococo plaster ornamentation in the Working Men's College.——*A Treatise on Masonry Construction*, by Ira A. Baker, C.E., Professor of Civil Engineering, University of Illinois. Third edition (London: Kegan Paul, Trübner & Co., Limited). In this treatise Professor Baker has reprinted in a wide and extended form the manuscript textbook he has prepared for his own class at the University. The principles of masonry in its scientific aspect are considered pretty fully. Tests of building stones, classification of stones, bricks, their manufacture and requisites, crushing strength, size, weight, and cost, are dealt with in a methodical manner, and in the order the architect is required to use such materials. Lime and cement are fully treated, on which the author refers to recent experiments, Mr. Faija's work, the tests recommended by the American Society of Civil Engineers, and other information. Part II. deals with methods of preparing and using materials, in which we find many practical remarks. The data for estimates are particularly useful, and are given under a distinct heading under each material. We see also clauses for specifications. Stone-cutting has been handled in an elemenary manner; the tools used, methods of forming and finishing surfaces, kinds of walling, ashlar work, specification for ashlar and rubble, measurement, and estimating being points dealt with. Brick masonry in its practical aspect follows, the author giving some useful specification clauses for sewers, arches, and other work. Part III. treats on foundations of various kinds, in which the crib and open caisson, the pneumatic, freezing, and other methods are described. Under masonry structures, dams, retaining walls, bridge-piers and abutments, culverts, and arches are discussed. The theories of the arch are well described and illustrated by diagrams, and various rules are given for apportioning the thickness of arch, abutments, &c. Details of backing, spandrel filling, drainage, and centring are comprised. As an elementary compendium of data and results for the architectural and engineering student, Professor Baker's volume will be found very concise and complete, though it does not enter into architectural details of masonry, nor into problems like groined arches, and arches on the curve. The classification of matter and the sub-headings or sections are valuable features of the book, and facilitate reference.——*Ye Olde Corner Postes of Ipswiche.*—Few towns are so rich in examples of Mediæval wood carving as applied to domestic buildings as is Ipswich, and Mr. J. Shewell Corder, a local architect, has rendering good service in sketching more than a dozen choice specimens of the quaint corner posts still to be found at the junctions of the streets before they were swept away by the refrontages and rebuildings inevitable in a thriving commercial centre and port. The sketches are freely and boldly drawn, and evince sound technical knowledge, and facility in catching the salient points of a carving. With a well-written preliminary chapter on the Ipswich dwellings of the 14th and 15th century, and a brief description of each example, they make up into a folio volume, being published by subscription. The examples are widely diversified in character, but are nearly all of the Early Tudor period. One at the corner of Oak-lane and Northgate-street, formerly an inn, and now an architect's residence, has on the elaborately-carved bracket the representation of a blacksmith making a horseshoe on his anvil; another in Foundation-street shows Reynard in monk's cowl preaching to a flock of geese; and a third removed from Brown's-yard to the collection in London, depicts Queen Elizabeth and Mars, the latter incased in plate armour.

The 45th annual meeting of the Cambrian Archæological Association was held on Wednesday at Holywell, under the presidency of Lord Mostyn. There was a large attendance of archæologists from various parts of England and Wales. Excursions were made to St. Winefred's Well, Basingwerk Abbey, and Gop, a tumulus where Queen Boadicea is supposed to have been buried.

Plans are in the course of preparation for a new church to accommodate 380 people, for the parish of St. Andrew, New Clee. The church, which will be built of red bricks and Ancaster stone, will contain nave, chancel, organ-chamber, and western vestries for clergy and choir. The east end, facing Albion-street, will be the principal elevation, embracing the large porch entrance, chancel end with traceried windows, and the tower and spire. Mr. E. W. Farebrother, F.R.I.B.A., of Grimsby, is the architect.

The ratepayers of Ramsgate have decided by a large majority in favour of the construction of a new marine drive at a cost of £40,000.

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CONTEMPORARY ART WORKERS AND MANUFACTURERS.—ARCHITECTURAL ASSOCIATION EXCURSION SKETCHES, 1890.—A PRIVATE ART GALLERY AT PENARTH, CARDIFF.—THE VICTORIA HOSPITAL, FOLKESTONE.—TWO NEW RESIDENCES AT CARLISLE.—ADDITIONS TO THE DOLPHIN HOTEL, HERNE BAY.

Our Illustrations.

CONTEMPORARY ART WORKERS AND MANUFACTURERS.

(See description on p. 248.)

ARCHITECTURAL ASSOCIATION EXCURSION SKETCHES.

These drawings, by Messrs. T. McLaren and M. B. Adams, illustrate the A.A. visit to Oxfordshire of last week, described on p. 242.

A PRIVATE ART GALLERY AT PENARTH, NEAR CARDIFF.

The "Turner House" was erected a year or two ago at Penarth, near Cardiff, by Major J. Pyke Thompson, J.P. It is a *bijou* art gallery which contains a number of very choice and interesting works by the older English water colourists, a unique collection of the etchings of Meryon, several excellent examples of Dutch and English masters in *genre*, and some well-selected and costly specimens of Chelsea, Worcester, Swansea, and other rare porcelains. The title of the "Turner House" has been given by Major Thompson rather in honour of the name of Turner, as one of the greatest associated with art, than as indicating any special connection between it and the works exhibited. Nevertheless, a magnificent drawing by Turner holds a central place in the gallery with smaller works by him, and also a complete series of the "Ports and Harbours," and typical examples in various states of the *Liber Studiorum*. Setting aside a portion of the grounds attached to his residence, Major Thompson obtained sketches for a small art gallery from Mr. Edwin Seward, F.R.I.B.A., and from these designs the building was carried out by the architects, Messrs. Seward and Thomas, and the gallery during every week since its completion by the contractor, Mr. Burton, of Cardiff, has been thrown open for the use and enjoyment of the public on Sunday afternoons and on Wednesday afternoons. The building is erected in red brick, the carving, &c., being executed in red Shawk stone, and the frieze, which typifies art and literature, in *sgraffito*. The interior contains: On the ground floor, an entrance hall and staircase, with studio attached, and adjoining rooms for a caretaker, with back entrance from the grounds of Major Thompson's residence. On the first floor, the large gallery, with a platform recess and a small dressing room. These features have been made available on one or two rare and pleasant occasions when the owner has invited the South Wales Art Society and the Cardiff Literary Society, &c., to hold their reunions in the building. The rooms are decorated very plainly in white and gold, with effective brown paper backgrounds for the picture hanging, above which is a deep gold frieze of Tynecastle tapestry. The collection of art works is slightly varied from time to time, a recent change of a few weeks ago placing on view, among others, some exquisite architectural drawings by S. Prout, Nash, and Cotman.

THE VICTORIA HOSPITAL, FOLKESTONE.

This building, formally opened on July 3rd last, has been erected as a memorial of the Queen's Jubilee, to replace the present unsuitable building and to meet a much-felt want. The cost was to a large extent raised during the Jubilee year. The site, consisting of 1½ acre, was purchased at a cost of £1,500, is well situated, having open spaces and a good outlook on every side. The committee requested designs from four local architects for a building suitable for 35 beds, with large administrative offices, and an out-patient and dispensary department. They consulted Prof. Roger Smith, who advised them to adopt the design of Mr. Joseph Gardner, of Folkestone, who has carried out the present building. The designs included two wings, which the funds would not allow to be carried out at once, but which can be added in the future. There was an alternative design sent in with circular wards, which may be adopted if preferred. The present building, which is the centre portion of either design, is adapted for 20 beds, with 1,600 cubic feet space to each, and has cost about £8,000, is faced with red bricks and Westwood Ground stone, and has Homan and Rodgers' fireproof floors and wood blocks. The builder is Mr. W. Brooks, of Folkestone.

CHATSWORTH SQUARE, CARLISLE.

The accompanying illustration represents two new residences that have recently been completed on the Duke of Devonshire's estate on a site at the east end of Chatsworth-square. The elevations are built with red bricks from Mr. J. C. Edwards's Ruabon Works, and local white stone, the roofs being covered with green slates. The interiors are well finished with pitch-pine staircases, and all other joiner's work of yellow pine, painted in various colours and varnished. The plasterer's work throughout has been executed with Robinson's cement, which has allowed the walls and ceilings to be painted, papered, and decorated before the houses were occupied. The drains have been carefully laid with Adams's automatic flushing tanks, in brick chambers at the head. The work has been carried out by Mr. T. Taylor Scott, architect, Carlisle, for Mr. J. B. Scott, of the firm of Messrs. B. Scott and Sons, and Mrs. Hardy, of the same city. The following local contractors have been engaged—viz.:—Builder's work, Mr. Jas. Metcalfe; joiner's work, Mr. Jos. Forster and Mr. Wm. Batey; slater's work, Mr. C. J. Nanson; plasterer's and concrete work, Messrs. R. M. Ormerod and Son; plumber's, painter's, and glazier's work, Messrs. W. and R. M. Hill.

The town council of Glasgow recently decided to purchase St. Andrew's Halls at an outside cost of £2,500. The committee which is carrying out the work has reported that so many unforeseen things have had to be done in the way of alterations and decorations that already £4,115 has been expended. They now sought authority to employ Mr. William Leiper, architect, of Glasgow, at a fee of from 75 to 100 guineas, with a view to seeing that the repainting of the halls should be executed in a harmonious manner. The required permission was given after some discussion.

The old Potteries Railway, which was intended to connect the Cambrian Railway and Shrewsbury with the Potteries, but was never completed beyond Shrewsbury, will be opened soon after having been closed for several years. The work of reconstruction has been intrusted to Mr. Charles Chambers, Westminster, and the line has been handed over to him this week by the new company. It is proposed to extend the line to Market Drayton. The old portion, that between Shrewsbury and Llanymynech, is expected to be finished in twelve months.

The memorial stone of a technical school at Coatbridge, which is being erected by the Old Monkland School Board, with the aid of the first building grant to Scotland from the Science and Art Department, is to be laid with masonic honours by Sir Archibald C. Campbell, of Blythswood, Grand Master Mason of Scotland, early in October.

The Corporation of Manchester have accepted from Mr. R. R. Ross the gift of fifty-four water-colour drawings by deceased artists of the British school, collected at a cost of £3,500; the only conditions being that they are hung together in one of the galleries of the Royal Institution in that city and that they are exhibited free of charge.

COMPETITIONS.

Birmingham.—At the last meeting of the School Board, the Chairman announced that Mr. Henman, the assessor appointed by the Board, had given his awards to the plans submitted for the Greet school, in the following order: First to the one sent in under the name of "Light," second to "Sidelight," and third to "Practical." It was resolved that the first set of plans be accepted, and also that £15 and £10 be given to the authors of the second and third sets respectively. On the envelopes containing the names of the competitors being opened, it was found that Mr. A. Harrison, Colmore-row, was the successful architect. Messrs. Essex and Nichol sent in the second set, and Messrs. Cossins and Peacock the third.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

The Nottingham Architectural Society.—A most instructive and interesting excursion was made on Monday to Edinburgh and the Forth Bridge by the members of the above society, together with a few visitors. Arriving at Edinboro' about half-past eight, breakfast was partaken of at the Edinbro' Hotel, after which the party drove to the Forth Bridge, by way of the magnificent park of Dalmeny, on the banks of the Forth, a privilege graciously accorded to the society by the Earl of Rosebery. Arriving at Queensferry, the courteous resident engineer, Mr. Adam Hunter, accompanied the party across the bridge, pointing out the many interesting characteristics of the structure. Much amazement was expressed at the magnitude and boldness of the undertaking, to appreciate which thoroughly it is necessary to walk across the bridge as well as to view it from the river. Returning across the Forth by a steamer, the enormous spans were seen to advantage. After spending several hours at the bridge, the party returned to Edinboro' to lunch; after which, the various places of interest in the city were visited—such as Holyrood, Carlton Hill, Castle, the Exhibition, &c. The party dined at eight, and left Edinboro' at eleven, reaching Nottingham on Tuesday morning, after having spent one of the most enjoyable of the many interesting excursions this society has made.

CHIPS.

Memorial bricks of a new Wesleyan chapel were laid at Burton Latimer last week. It will be seated for 200 persons, and Mr. G. Coltman, of Kettering, is the builder.

An interesting discovery has been made at Verona, near the Cathedral. Some workmen were excavating a part of the Piazza of the Duomo for the repairs of a drain, when they came upon a gigantic statue of Minerva in white marble, in a perfect state of preservation.

The memorial stones of a new Sunday School in connection with the Primitive Methodist Chapel at Oswestry were laid last week. The building, which will have a frontage to Castle-street, will be in the Gothic style, of simple character, and will be built of red pressed bricks, with Grinshill stone dressings. The interior is 63ft. long, 42ft. wide, and 23ft. high, and contains a lecture-room 24ft. by 18ft., two infants' classrooms, and eighteen classrooms. The plans were prepared by Mr. E. Bremner Smith, of Oswestry, under whose superintendence Mr. W. H. Thomas, of Oswestry, is carrying out the work, at a cost of £1,000.

A beginning has been made with the scheme for filling the external niches of the National Portrait Gallery at Edinburgh with statuary. Two Edinburgh citizens have contributed figures of King Malcolm Canmore and his Queen, modelled respectively by Mr. John Rhind and Mr. Birnie Rhind. The figures are each 6ft. 6in. in height.

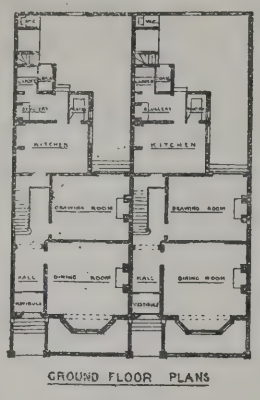
A special committee of the Cardiff town council has been appointed to consider and report on the desirability of providing a new town hall, comprising courts of justice and municipal offices, on the present or some other site, and of alternative schemes for the utilisation of the whole or in part of the present buildings and site.

The Wednesbury town council have increased the salary of the borough engineer to £450 per annum, allowing him at the same time £100 to cover out of pocket expenses in relation to sewerage matters.

Additions at St. John's Schools, Crossens, of a new infants' school with club-room over is about to be commenced from plans prepared by Mr. Goodwin S. Packer, architect, of Southport.

TWO · NEW · RESIDENCES ·
CHATSWORTH · SQ · CARLISLE

T · TAYLOR · SCOTT · A·R·I·B·A CARLISLE·



GROUND FLOOR PLANS

Scale of 10 0 10 20 30 40 50 Feet

RETAINING-WALL THICKNESSES.

A GENERAL rule, sanctioned by several engineers of repute, is to make the thickness of a wall to sustain earth level with the top, one-third of the height from the top of footings. Benjamin Baker, whose experience in the construction of underground railways entitles him to speak, shows that a wall whose thickness is one-fourth of its height, and which batters 1in. or 2in. per foot on the face, has sufficient stability when the backing and foundations are moderately durable. This thickness allows a factor of safety of 2 or thereabouts. For a vertical brick wall, Gen. Fanshawe recommended 32 per cent. of the height for the thickness, 24 per cent. of height for a batter of one-fifth, 25 per cent. of height for batter of one-sixth, 26 per cent. for a batter of one-eighth, 27 per cent. for a batter of one-tenth, 30 per cent. for a batter of 1-24th. These thicknesses are given for earth of ordinary kind. For vertical walls sustaining sand, gravel, or earth when backing is loosely deposited, the thickness should be from 35 to 40 per cent., this being given at the top of footing course; the lesser thickness being for cut stone or coursed rubble, and the greater for brick or common rubble.

LIGHTNING RODS.

THE protection of buildings from lightning is becoming a very necessary precaution in the United States. The larger and lofty hotels are exposed to the electric discharges, which are very great and terrific. Thus we hear of one new hotel at Cliffs Point, on Lake Champlain, having been exposed to a very severe storm, but which passed through it without damage. The lightning rods put up by a New York firm, Messrs. J. D. West and Co., were connected to every part of the structure, and put into communication with every metallic object. The rods are ½in. square, of yellow copper, they extend along the ridges of the roofs, and have points on all pinnacles and gables, and run down corners and into the earth 10ft., and connect with water and sewer pipes. The building is a long parallelogram, having towers at the centre and at each end. As all parts of the structure are placed in metallic contact, and are thus protected.

ZINC ON BRICKWORK.

It is said that sheet zinc, when in direct contact with brickwork, suffers from rapid corrosion. The fact has been noticed in connection with the Dublin City Market halls, where sheet zinc rested on brick walls. At the contact of the two materials the zinc was deeply pitted. The bricks were found to contain 1·14 per cent. of soluble salts, which increased the effects of moisture. The result noticed ought to be a lesson to architects and builders in laying zinc never to place it in contact with brick or stone, especially when subjected to moisture. The zinc gutters should be laid on boarding, either felted or plain. Where brick parapets occur, the sheet should be turned up, but not to touch the surface of the brickwork, and the edge inserted in a groove covered by a cement flushing. In some cases the flashing can be fixed free of the brickwork on wooden grounds, and the zinc simply made to cover it. Direct contact with the masonry is best avoided.

The Bristol Borough Asylum at Stapleton is being enlarged at a cost of about £90,000, from designs by Messrs. Crisp and Oakley, of that city. The new wards will provide accommodation for about a thousand patients, and additional accommodation for the administrative department, a general dining-hall, new workshops, and laundry are also included in the scheme. Mr. Beaven, of Bristol, is the contractor. The works were inspected by the members of the city council on Wednesday week.

Mr. John Grundy, of 30, Duncan-terrace, City-road, London, N., has just received orders for supplying his Patent Warm-Air Ventilating Smoke-consuming Firegrates to the National Health Society, Berners-street, W.; the Board Schools, Holbroke; the Board Schools, Cobholm Island; Hatchford Nurseries; the Maidstone Institute; Lunatic Asylum, Cork; the New Schools, Blake; the Congregational Schools, Chingford; Hayward's Heath Board School; the Brighton Road Schools; the New Schools, Aldershot; the Grammarian Schools, Atherton; the Parish Rooms, Lytham-le-Sands; the Bromley Park Estate; Bromley House, Broadstairs, &c., &c.



ADDITIONS TO THE DOLPHIN HOTEL, HERNE BAY.

THE above extensive additions comprise large smoking-room, with lavatory and w.c. accommodation, eight new bedrooms, bath-room, ladies' lavatory, &c. The elevations are of selected yellow stocks, all dressings being of patent red stone. The roof is covered with red plain tiles, the lower windows, doors, and fittings are all of teak, French polished. The whole of the works have been carried out by Mr. Lawrance Seager, builder, of Sittingbourne, at a cost of £1,260, from the designs and under the superintendence of Mr. G. E. Bond, M.S.A., of Rochester.

WAYSIDE NOTES.

members of the Architectural Associa- who accompanied the excursion to ave failed to have a good time, it will because of any lack of things worth et alone sketching and measuring. by the illustrations that have been l in connection with the annual outing, ict selected this year has proved ex- ly attractive to the excursionists' pencils. ne members of the A.A. have been in etching condition, or more time has been for the work than on some of the excur- ere ground has been covered at the of quiet wayside studies.

ciety of Architects contemplates keeping modest distance of town, and it will not that account, nor will it find the places ny less beautiful and interesting they are so near. Merely to pass the pleasant Kentish countryside at when cornfields are golden-brown and lens are ready for the pickers, will elight to the lover of nature, and architects are lovers of nature. r, Maidstone, and Canterbury, more- places that, for the interest afforded d architectural character, hold their own, ize, against any old English town. All spects of a renown that is almost classical, ve quiet, retired, out-of-the-way nooks, ny a modest old architectural relic. the massive keep at Rochester, rising nd upright in strong contrast to the l lines of the flowing Medway. There ll Harry Tower at Canterbury, seen in rspective under the walls of nave and ; and there is the old parish church at ne, forming with the venerable buildings with it, and the barge-laden river, a ue composition indeed. Three well- iews are these, yet ever charming how- requently we may behold them—three groups of old buildings that occur to one decting upon the architectural remains of Kentish towns, and not three isolated s of beautiful grouping; but three leaders of a host of others scarcely less remarkable. o, the excursionists will find the places ited round Tunbridge to be of passing Tiny Bidborough Church, glorious st, and historical Hever, will enchant ho may have been unacquainted with ore the excursion; and the like of Chid- e village I have never seen. Knowle tham are also to be included in the tour, ncludes at Dover at the end of the present nd which, having been so well planned, ut prove a great success. The routes being so near at hand, there should be ous meet at the west door of Rochester l on August 25th, the opening day of the l excursion.

as everyone is taking, or thinking of their yearly period of recreation, there burst of competition advertisements. four announcements last week, your devoted to the advertising of competi- k unusually busy for the time of year. nnouncements made, however, one relates the extension of time in the Swansea Board competition—an announcement ll annoy good men and true, and he pet vices of the indolent and pro- ting; but concerning the extension of competitions I have already written and, I much fear, wholly in vain. Of nicipal lodging-house I have before and have only to add that the general among architects seems to be that fair- squareness will be the characteristics of petition. In their advertisement for ath designs, the Coventry Town Council xhibited liberality in the giving of -money, £100 and £50 in a £15,000 g certainly generous. I have seen the rs and instructions, but they are not of lly generous order; in fact, they are bly limited and meagre. The Oldham Board mean to make something towards s. of their competition, even if only two- per applicant for particulars. They are be blamed: the half-a-crown, little as vill prevent applications out of mere

pose we must expect another highly- ed competition, if the people of Morley have decided to have a new town-hall. This is the sort of competition that drags every whole- sale competitor from his lair. Everyone has a go at the town-hall. It is rather surprising, after the experiences which the profession have lately had, that it is not a bit tired of competing in its two hundreds. As it is, with three premiums of 100, 50, and 25 guineas, as proposed by the Town-hall Committee of the Morley Town Council, we may be sure that we shall have another rush of mature competitors and youthful premium hunters.

It is proposed, I see, by the ten councillors of Morley, that it be a condition of their competition, if held, that each competitor shall, if required, produce a *bonâ fide* tender from an approved contractor to carry out the work for the amount specified in the estimate to accompany each design. This will give some additional trouble, and won't be at all a welcome innovation to a class of competitors about whom the less said the better. It would be a point to the advantage of local men, and very inconvenient to those at a distance. All the same, it is certainly calculated to check reckless and unfair competing. It is not a new plan, but one seldom adopted. If more generally used in the future, and found distasteful to competitors, they would only have themselves to blame, or rather their unscrupulous fellows who will do anything to gain a competition, and look upon the overrunning of stipulated cost as rather a joke than otherwise. Inasmuch, however, as the assessor is supposed to be a perfect check against swindlers of this order, the honest competitor need not fear that he will ever have to suffer for the misdeeds of others and be put to the additional labour and expense of giving *bonâ-fide* tenders with his designs. Now and then, as will possibly happen in the proposed Morley competition, the system may be adopted, and in very small, local competitions it is often desirable to get, by compulsion, tenders from contractors; but these are only exceptional occurrences, and need but be regarded by the competitor as relieving the monotony of ordinary competitions.

I was under the impression that something had long ago been done to mitigate the nuisance caused by the pollution of the Thames by the drainage of house-boats. Attention was drawn to the subject a year or more ago, and I well remember commenting upon it at the time. From a question asked of the President of the Board of Trade in Parliament, a day or two before the close of the Session, it is to be gathered that the nuisance has continued unabated. It appears that, in his evidence before the committee now inquiring into the water supply of London, Sir Robert Rawlinson had touched on the question of the pollution of the Thames by house-boat drainage. Considering the number of small floating houses that appear on the Thames in Henley days, one would have thought that the Thames Conservancy Board would have taken some measures to prevent the wholesale pollution that yearly takes place in the upper reaches of our pleasant metropolitan waterway. Something *may* now be done, as Sir Michael Hicks-Beach has promised to communicate with the Thames Conservancy Board on the subject. It is greatly to be hoped that stringent measures will be taken, as, besides the pollution of a source of London water-supply, it is an injustice to riparian owners and to individuals—at this time of the year in their thousands—who seek health and pleasure in holidays spent on the bosom of old Father Thames. House-boat owners may find their customs and arrangements very convenient and comfortable; but, if need be, they must be a little incommoded for the weal of the community.

If Mr. Robert Boyle, or someone equally enterprising, would make a "Sanitary Crusade" round England, or even London, we might practically benefit. Matters of drainage, &c., appear rather frequently among the minor news of the week. There is diphtheria in Paddington, owing to polluted drinking water; scarlet fever in a Yorkshire village, owing to the bad state of the village pond; hundreds of fish have lately been poisoned in the River Soar, Leicestershire, owing to the amount of filth conveyed into the stream by sewage, towns and villages discharging their sewage into the river between Leicester and Loughborough, a distance of twelve miles; and a correspondent writes to Saturday's *Times*:—"At Ware Lock the treated sewage of Hertford slowly flows into the Lea through an open cutting about two miles in length. The stench arising from this affluent is most offensive, and the surface of the—" &c., &c.; for I can't go into these nauseating details and put them before such readers as are left at work, and feel, doubtless, that they ought to be away breathing sea breezes or moorland ozone instead of reading about disorganised drainage arrangements. Suffice it if I point out that at Ware *treated* effluent comes into the Lea, and remark that it won't do, if processes which are theoretically supposed to turn out a perfectly inoffensive liquor prove in practice to be as the *Times* correspondent describes at Ware; for I presume that at Hertford they employ the modern precipitating and settling method of treatment.

The Lea is a source of London drinking-water supply, like the Thames. And, like the Thames, it should be guarded against pollution. If, as there appears some probability, the Metropolitan water supplies are at some future date to be taken over by the municipality, it is only reasonable to hope that fresh sources of supply will be sought, and the Lea and Thames, the absolute purification of which is well-nigh impossible, abandoned as founts for the Londoner's drinking water. Other great cities in England and Scotland have pushed out aquaducts far away from their own districts, and obtained a pure crystal stream. Sooner or later London must do the same.

GOTH.

CHIPS.

The restoration and re-roofing of All Hallows Church, Rochester, has just been completed. Messrs. J. G. Naylar and Son, of that city, were the contractors.

The memorial stones of a new church in course of erection at Penygroes, Brynkir, were placed on Saturday by Lady Puleston. Mr. H. Kennedy, of Bangor, is the architect, and Mr. R. R. Williams, of Carnarvon, the contractor. Mr. Assheton Smith has given the slates for the building, and the tile work has been executed by the Ogwen Tile Company, Bethesda.

The High Level Railway, at Halifax, will be opened for passenger traffic on Wednesday, the 3rd prox. The line is three miles in length, and the terminus is 300ft. above the level of existing stations. Messrs. John Fraser and Sons, of Leeds, and Mr. Samuel Utley, of Halifax, are the joint engineers, and Messrs. Charles Baker and Sons, of Chesterfield, are the contractors.

At St. Michael's Church, Spurriergate, York, a new organ has been built by Messrs. W. Denman and Son, of Skeldergate, York, and was opened on Sunday. The case is of varnished pitch-pine, the interior woodwork being of polished oak, and the pipes are of spotted metal.

A stained-glass memorial window, placed in the south side of Hanbury Church, near Stafford, was unveiled on Thursday in last week. The subject is St. Mary, wife of Cleophas, represented as clinging to the cross, and the architects are Messrs. Ward and Hughes, of London.

The local board of Torquay have appointed, from among 109 candidates, Mr. Garrett, late assistant-surveyor at Bournemouth, as surveyor, in the stead of Mr. Joseph Hall, C.E., resigned, now borough surveyor of Cheltenham. At the Torquay Town Hall on Friday, Mr. Hall was presented with a handsome and valuable inkstand, composed of local marbles, by the employés of the Torquay Local Board, as a token of their respect and esteem.

An improvement in the Wyle Cop, at Shrewsbury, has been made by the restoration of the Old Unicorn Inn. This framed building, which for many years presented a dilapidated appearance, is now faced with black and white half-timberwork, and the whole has been put in thorough repair and extended. It was anticipated that good timberwork would be found under the plastering; but with the exception of oak tracer-windows, the framing was of too rough a nature to be exposed. The half-timberwork is thus a sham formed with boards, and made to correspond with the genuine work in the old gables. The shops under the building have been glazed with plate-glass, and all the other windows filled with mullioned bays, and glazed with leaded glass. A building at the back consists of the old frame-work, under-built, and filled in with new windows and bays. The work has been carried out from the designs of Mr. A. B. Deakin, of Castle-street, Mr. Richard Price being the contractor; Mr. John Davies executed the glazing; and the painting and decorating have been carried out by Mr. John Robinson, all of Shrewsbury.

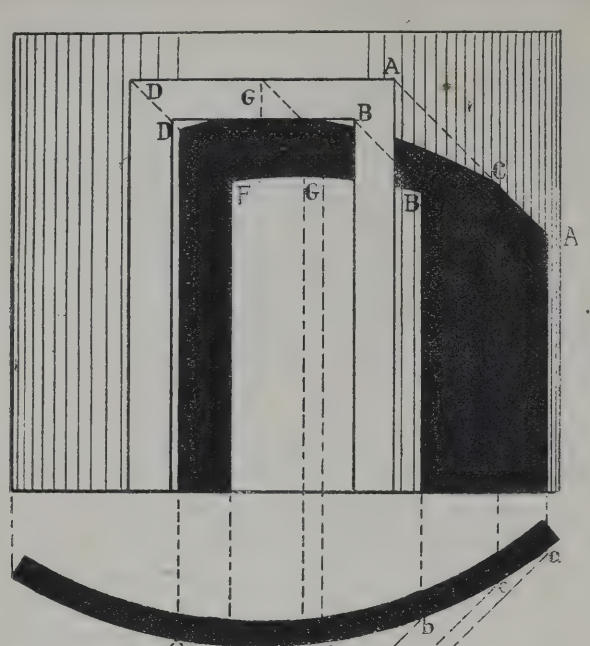


Fig 16.

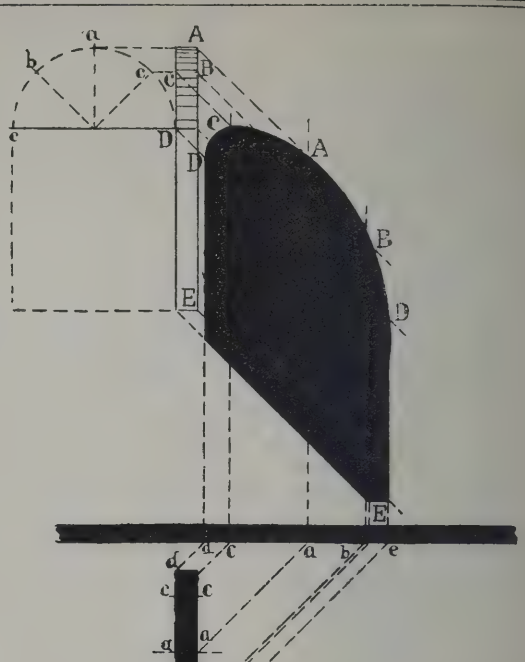


Fig 17.

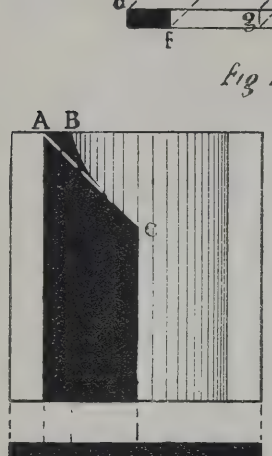


Fig 18

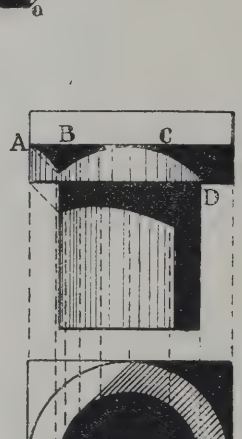


Fig 19.

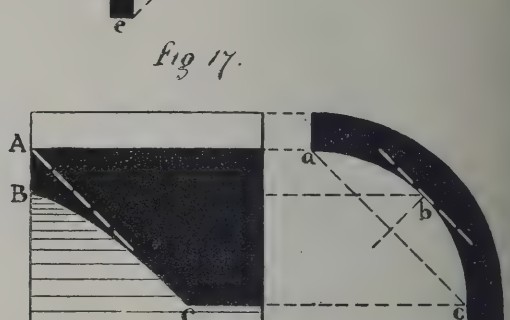


Fig 20

SHADOWS.—V.

THE shadow in Fig. 16 is obtained in precisely the same manner as that of Fig. 15 in the last article, the only difference being that the shadow in this case is projected against a convex surface instead of a concave surface as in the last example. We have to draw the shadow lines from the corresponding points in both plan and elevation, and then find the points of intersection in the elevation. The curve drawn through these points will give us the shadow on the convex surface.

At Fig. 17 we have the body A D E (seen edgewise) at right angles to the plane receiving the shadow; its front elevation is indicated by the dotted lines *e b a c*, &c. To obtain the shadow on the wall plane thrown by this body, we have firstly to take several points on the circumference of the head, such as *e b c a d*, in the elevation and mark off the corresponding points in both plan and elevation at *c b a d e* and A B C D. The rays of light at 45° strike the angles on plan at *d* and *e*; the intersection of the projection of these points with the lines at 45° from E in the elevation will give us the points E E; and being further raised, the points D D. The intersection of the lines *a* A will give us the shadow point A; and those of the tangent points *c b*, C B the shadow points C B. We join the points D E, E D, draw the curve of the shadow points D C A B D, and the shadow is comp'ete. Supposing that instead of being solid, the figure *c b a d*, &c., in elevation represented an opening, such as that of a window, the place now occupied by the shadow C A B D E would in this case be in the light, the surrounding portion of the wall plane being in the shadow.

Fig. 18 gives us the shadow of a semicircular niche. The line at 45° from the point *a* meets the concave surface at *c*. The intersection of the line projecting *c* with the shadow line from A in the elevation gives us the shadow of A at C. The shadow, however, does not commence at the point A, as often drawn, but from the point B, for the following reason: The rays of light striking at 45° on plan do not meet the concave inner surface of the niche until arriving at the tangent point *b*. It is, therefore, at this point *b* that the shadow commences. Raise the point *b* to B, and complete the shadow by drawing the curve B *c*.

At Fig. 20 we have a similar shadow, except that in this case the vertical plane is taken, the rays of light meeting the inner surface of the arch at the tangent point *b*, giving us *b* B as the point where the shadow should commence. The curve B to *c* completes the shadow.

At Fig. 19 we have a round column crowned by a square and round capping. We have first to find the shadow of the upper square block on the round, and then that of the round cap on the column. In both plan and elevation we take any point, A B *c*, *a b c*. We draw the lines at 45°, and find the intersection of their projections. These points wi l give us the shadow of the square block on the circular cap. As a consequence of what we have often remarked above in regard to the distance of a shadow in proportio to the distance from the plane receiving th shadow, we find that the shadow of A B C wi take the same curve, and may be drawn with th same radius as that for the circular cap receivin the shadow. In the same manner we obtain th shadow of the circular cap on the column.

Arthur Vye-Parminter.

Palais des Beaux-Arts, Lille.

CARPENTRY AND JOINERY.—XXXIII

window finishing—(*continued*).

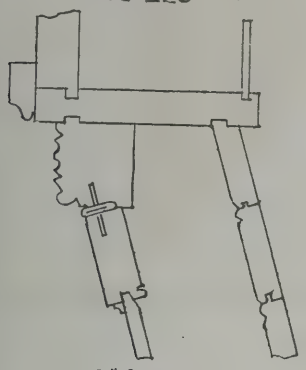
IT has been already stated that provision shoul be made inside of rooms in connection wit the sash-frame for *sun-blinds;* and it was show that by means of narrow, square, jamb-lining such means is in some cases provided. But will be obvious that when there are shutters o splayed linings, such will not suffice. Now th plan adopted in these cases is to introduce a *blin fillet*.

Fig. 225 shows a section of a blind fillet, inside casing of sash-frame, inner stile of shutter, o framed jamb-lining.

It will be readily seen that this gives additiona room for the backfold shutters, permitting them to be put in wider, so that it will not be n necessary to make each succeeding backfol narrower than the previous one in order to get into the box (provided there is more than one o each side). In wide windows it is not unusu

to have five backfolds in addition to the front shutters. It will be readily understood that the *blind fillet* may be varied as regards the moulding worked upon it. Adopting a blind fillet as described, then the window-back may have its *face side* in the same vertical line with the inner edge of blind fillet (that next shutter), and then the capping of the back would be of the same

FIG 225

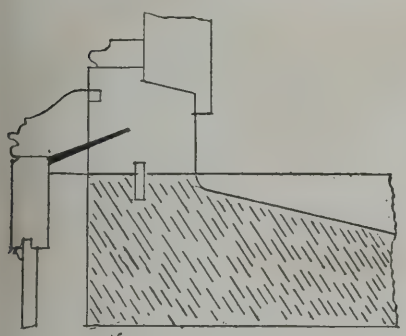


2" Scale

width as the blind fillet, and suitably moulded, and the blind fillet would then be scribed to fit the capping of the window back.

Fig. 226 gives a simple capping for a window back, showing how it fits into window-frame sill, and also arrangement for receiving the window

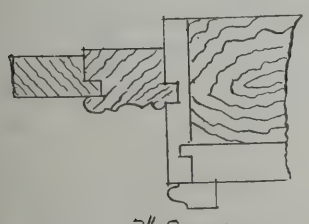
FIG. 226



2" Scale

back. Let it be distinctly understood that no undercut moulding is suitable for a capping to window backs in these cases, and it should be of such outline as not to retain dust or water. In some superior work it is the rule not to allow the blinds to be seen when they are rolled or drawn up. In order to do this, the top blind fillet is kept high enough up on the top inside casing to allow for roller and strap, to which roller fittings

FIG 227



2" Scale

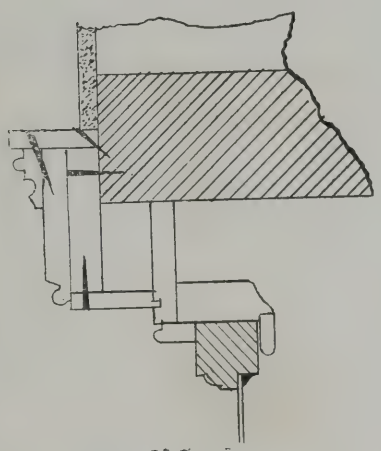
are screwed. It may not be considered necessary to mould the top blind-fillet at all, seeing that it is hidden away out of sight; this, however, is left an open question.

Fig. 227 will give the reader an idea as to what is meant by keeping up the top blind-fillet. In making the sash-frame, blocks should be put in between the top outer and inner casings in order to strengthen for the blind-fillet. The side fillets will be scribed to fit the top, and the top, being nailed down through into the ends of the side fillets, strengthens the top very considerably. It is better to fix the fillets to the casings with screws, as they will be more firmly held, and there will be less shaking of and tendency to unsettle screeding, &c. Sufficient has been stated about this style of shutters, and a somewhat common method of finishing a window with shutters will now be detailed. It is found in use for kitchens in middle-class houses and in parlours of common property.

Fig. 228 shows the plan of such finishing. A hanging or hingeing piece is attached to the inner casing of sash-frame, showing a suitable margin from the edge of the inside casing, say ¾in. or 1in., and to this the front shutter is hinged, say, with 3in. butt hinges, the bead on the edge of the front shutter corresponding with the knuckle of the hinges; the backfold turns in behind as shown, and as is seen, the hanging piece provides room for this.

The total width of the shutters is the space between the two *hanging* or *hingeing pieces*, and the workman will just have to arrange the width of the front shutters so as to suit, knowing beforehand that he can usually only have one backfold at each side. The window back fits in between the two hanging pieces; these need not reach to the floor—in fact, the simpler way is to let them rest on the capping of the elbows. The elbows are exactly fair with the front shutters, and if the outer stiles of the back are left 1in. broader than the line of hanging piece, this would serve as a good grounding for nailing the elbow to, and at the other (outer) stile it can be nailed to the grounding which has been prepared for it.

FIG. 229



2" Scale

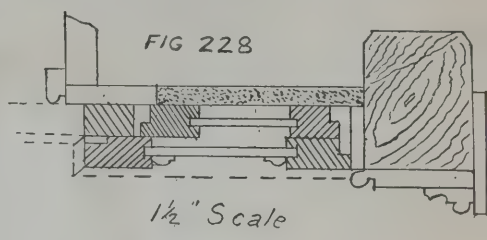
The capping of elbows and back has usually a ¾in. bead worked on the edge. In fixing this finishing, the hanging pieces can be put up first, and the front shutters hinged to these, and then all the other finishing put up to suit.

Fig. 229 gives a section through finishing at the top, showing inside casing, batten slip, part of hanging piece, lining piece, which forms *soffit*, and should be continued right along and terminate at the inside of the capping of each architrave. It will thus form a good ground for the top architraves under edge, which is very necessary on account of its great length. It shows also architrave, lintel, and grounding piece nailed against the lintel so as to prepare for nailing architrave to. The great objection to this style of shutters is that when the window hangings are in position they have to be held aside whilst the shutters are being closed or opened, which, of course, is considered troublesome. Another, and somewhat common, method of shutters, is to have them sliding just in a similar way to sashes, and parallel with the sashes.

This requires a frame somewhat similar to a sash-frame, and which is fastened to it (the sash-frame), but it is continued down under the level of the floor, the distance of course being according to the height of the sash-frame.

Fig. 230 gives a plan of one side of such a frame. It is seen that the stile of shutter frame requires to be wide enough to accommodate the two shutters, parting bead, a piece between inside casing and first or outer shutter, and also the thickness of the back. All this is clearly shown in Fig. 230, as also architrave, capping weights, and parting lath. It is seen that the shutter-frame stile is rebated for the window back; above the back a piece is nailed on, or better, screwed on, so as to

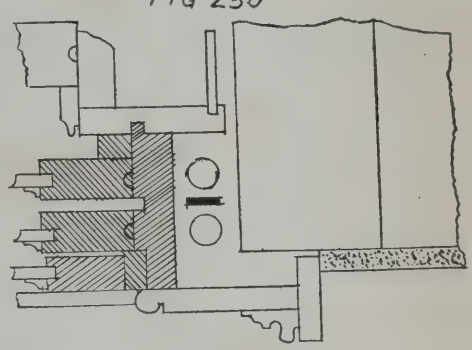
FIG 228



1½" Scale

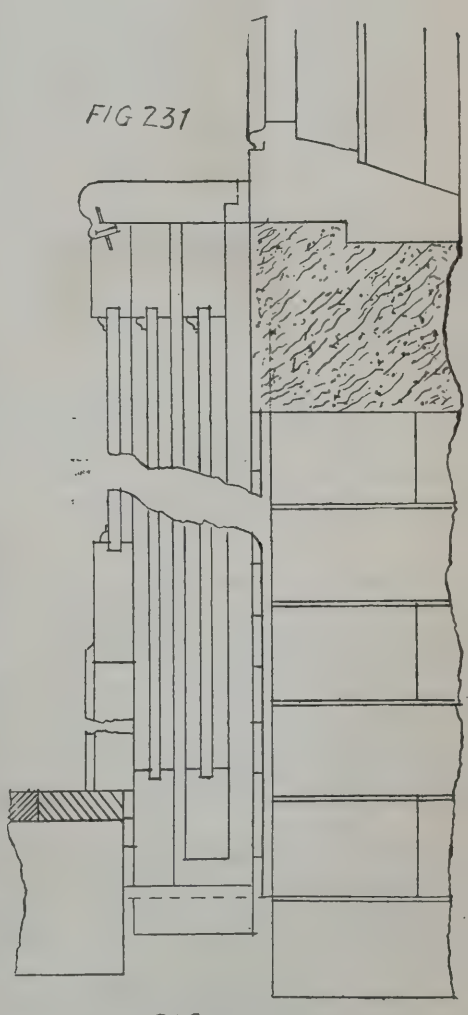
be readily taken off in case one of the cords should break: it can then be taken off and the shutter got at readily. It will be noted that in order to have no interruption to this, the archi-

FIG 230



2" Scale

FIG 231



2" Scale

trave must have its beaded edge just fair with the inside of shutter-frame stile.

Fig. 231 gives an elevation of these shutters from the sill of the shutter-frame to the sill of

the sash-frame. Rough boarding is nailed on the stiles of shutter-frame, so as to inclose in the shutters below the level of the floor, the *covering flap* shown hinged to the window back, and falling on the rebated piece nailed against the sill. During the day when the shutters are down the flap covers them and prevents an unsightly hole, and when the shutters are up it forms a rest for the bottom (inner) one. The height of the shutters for this style of finish will be readily obtained from the lath, or *rod*, on which the sash-frame and sashes have been set out in elevation; as, of course, the height will extend from the rebated piece, shown in Fig. 231 nailed against the sill, up to the head of shutter-frame, which will show the same margin from the top of the sash-frame as is shown at the sides. Then the bottom rail of the outer shutter and top rail of the inner one should just be opposite to each other, only one being seen when the shutters are in the closed position. These rails should be just opposite the meeting rail of the sash. The old-fashioned style of thumb-screw sash-fasteners is used to secure the shutters at the rails opposite meeting rail of sash, and there are lifting rings attached to plates let into the top rail of each shutter in order to lift them by, and if thought necessary *flush handles* may be let into the bottom rail of each shutter so as to draw it down by. In some cases where great economy is practised there is only one shutter, reaching up to the meeting rail of the sash, and this prevents any one from seeing in unless the person gets upon the stone sill. Again, where no objection is made on the score of cost, the cords suspending the shutters are covered by a board of the necessary width, which is hinged to the piece which is fastened against the inside casing, between the shutter-frame stile and the edge of inner casing; this piece in such case would be rebated to provide for the board, this board is turned round against the sash before the shutters are raised, and, of course, to allow the flap covering the shutters being lifted so that the shutters can be raised. The board covering cords may be ornamented by any suitable moulding, so as to take away its *plainness*, and should also be *clamped* at the ends if plain, or pieces *dove-tailed* in the back so as to prevent its warping if moulded.

CHIPS.

Castle Cliff of Crail, near the East Neuk of Fife, has been restored at the expense of Mr. George Duncan, of London, a native of the Royal burgh. The castle was the residence of Constantine and King David I. of Scotland, and the cliff has now been converted into an elevated promenade by the erection of a concrete wall 9ft. thick and 262ft. in height, protected by iron railings at the top.

The public library at Birkenhead was reopened on Friday after redecoration and repairs—works carried out by Messrs. McLachlan and Batkin, of that town, under the direction of Mr. Thorburn, borough surveyor.

The Capital and Counties Banking Company are about to build a new bank at Guernsey. The floors will be of fireproof construction on Fawcett's system.

A stained-glass memorial window has been placed in the Westborough Unitarian Church, Scarborough, by Mr. H. E. Morton, in commemoration of his golden wedding. The work is from the studio of Messrs. Powell Bros., of Park-square, Leeds, and illustrates the parable of the Good Samaritan and Christ blessing little children.

Works of water supply are being carried out for the local board of Audley, Staffs, from plans by and under the direction of Messrs. Ford and Slater. About eight miles of water-mains have been laid, the contractors being Messrs. King, Masterman, and Terry.

The Spiritualists' Hall at Walsall was opened on Friday. It is of brick, and contains two halls of equal size, one on the ground floor, and a loftier one on the first story, the latter being 34ft. by 50ft., and 22ft. high. The total cost has been £1,500. The architect was Mr. W. Jackson, and Mr. R. Evans has been the builder.

On Saturday last a new shelter was thrown open to the public at Middleton. Standing on an elevated site, very fine views of the surrounding country can be obtained from the building. It is built with local bricks and terracotta dressings, and the roof is covered with red tiles. The gables and gablets in roof are finished black and white, and the building is a neat example of Old English style. Mr. T. A. Fitton is the architect; and Messrs. E. Partington and Sons the builders.

Building Intelligence.

Blackwater.—The Passmore Edwards Institute at Blackwater, Cornwall, was opened on Thursday, the 14th inst. The institute is situate in the centre of the village, and has been built and furnished entirely at the expense of Mr. J. Passmore Edwards, proprietor of Building News, *English Mechanic*, the *Echo*, and *Weekly Times and Echo*, who has also provided the committee with 500 volumes as a nucleus of a library. The main entrance has over it a large stone, subscribed for by the villagers, the subscriptions being limited to a shilling, and on it are inscribed the following words:—"This building was erected by J. Passmore Edwards, Esq., of London, and presented to the inhabitants of Blackwater, his native village, A.D., 1890." Mr. Spargo, of Truro, executed this work, and the masonry of the building was done by Messrs. J. Prowse and Son, of Scorier. The building has been erected by Messrs. John Symons and Sons, the head of the firm acting as architect.

Brighton.—An addition to the decoration of the interior of the old parish church of St. Nicholas has been made in continuation of the chancel decoration. Three years ago a parishioner erected the cross which surmounts the screen, and subsequently a cornice was added to the screen. This was followed by the entire re-decoration of the chancel, in accordance with designs by Mr. C. E. Kempe and Mr. Somers Clarke, jun., of Dean's-yard, Westminster. The walls of the chancel arch, together with the front of the bays on either side, and ceiling over these bays and the screen, are now being decorated. The designs, which are by Mr. Somers Clarke, jun., have been carried out under his direction by Messrs. Powell Bros., Kentish Town, N.W. The ground-work upon the wall above the screen is of toned white, the floral design, arranged in a zigzag pattern, being in dark red; while on either side of the cross are placed shields, symbols of the Passion, these shields being inclosed by scrolls in blue and yellow. The ceiling, as that of the chancel, is in square panels, with ribs of yellow and black and with gilt bosses. The ground-work in these squares is of terracotta, the designs being alternate, consisting of wreaths picked out in toned white and in black. The cornice supporting the ceiling over each bay has been picked out in white and green, upon a light neutral green ground. Under the cornices are the words of Psalm cxlviii. 1. The lower portions of the bays are diapered. The screen is also undergoing partial redecoration.

Edinburgh.—At the Dean of Guild Court, the trustees of the Scottish Episcopal Church have obtained a warrant to make additions and alterations upon Coates Hall, at the west end of Grosvenor and Lansdowne Crescents, for the purpose of converting it into a training college in connection with the Church. An addition, three stories in height and 65ft. long by 33ft. broad, is to be erected at the north-east corner of the present building. In it accommodation will be found for the Forbes Library. In the present building will be located the class-rooms and dining-rooms, the upper floor as well as part of the new building being utilised for bed-rooms and bath-rooms for the students. A new porch and a chapel with open timber roof, a bell turret at the angle of the old and new buildings, and lodge at the principal entrance are also included in the scheme, which is to cost £3,500. The present style of Coates Hall is Scottish Baronial, and the additions, which have been intrusted to Messrs. Sydney Mitchell and Wilson, are to be carried out in the same spirit.

Haydock.—New Congregational Church and school buildings are about to be erected at Haydock, Lancashire, from the designs of Mr. T. W. Cubbon, architect, of Birkenhead, by Miss Evans, of Briars Hey, Rainhill, in memory of her late father, Mr. Richard Evans, proprietor of Haydock Collieries. The church will be provided with seating accommodation for about 650, and the school for about 350 scholars. The buildings, which are Late Gothic in character, will be faced with Ruabon bricks, relieved by red sandstone dressings; a handsome tower and spire has been arranged at the left of main front. The schools, which occupy a position to the right of church, have ample class-room accommodation for adults, and infants at the rear. The cost of the buildings will be over £6,000.

Melbourne.—Building operations are in progress at both the cathedrals in this city. The Roman Catholic one of St. Patrick, on Eastern Hill, is 13th Century in style, designed by Mr. W. W. Wardell, and the various contracts up to the present time have been carried out by Mr. John Laing, of Sydney, under the personal supervision of Mr. Denny, who has been the clerk of works since the commencement in 1860. The total amount expended to date is about £160,000, and the estimated cost of completion £70,000 more, or a total of £230,000. The principal items are the central tower, £20,000; the two western ones, £10,000 each; while £5,000 (in addition to the present contract, £25,000) will allow for finishing all interior fittings, carvings, &c. The complete plans show the extreme length of the building to be 320ft.; the length of the transept being 162ft. The nave and aisles are 76ft. wide, the transepts being the same distance across. The height to the summit of the central tower will be 260ft.; the western towers being each 203ft. high, while the gables and crosses are 100ft. from the ground.—St. Paul's Cathedral is Decorated Gothic in style. The original estimated cost was £100,000, but increasing the length of the nave, and other alterations, have involved an extra outlay of £10,000. Of this amount over £96,000 had been expended at the end of 1889. The extreme external length of the building is 273ft., and its extreme width 126ft. The nave from the main entrance in Flinders-street to the central tower is 164ft. long, the choir 91ft., and the transepts measure 35ft. each. The roof of the nave is carried by clustered columns, composed of alternate bands of freestone and bluestone, and this alternation of colour is carried out all through the building. The central tower is open for a height of 100ft., where it is closed in with a panelled wood ceiling. The ceiling of the nave is also of polished wood, with moulded ribs, and has a total height of 75ft. The principal features will be the southern towers, and the central tower and spire, which will be 275ft. in height. Sitting accommodation is provided for 1,500 persons. A tiled dado runs all round the interior of the cathedral, the colours chosen being a contrast of sage green and reddish brown. The pulpit, constructed of blackwood, is fixed in position, as well as the font, which is Gabo Island red granite. The bells have been hung for some months. The organ, by Lewis, of London, will cost £5,000. The reredos is ready for fixing, and the internal fittings are in an advanced condition.

Portsmouth.—The Town Hall was opened recently by the Prince of Wales. Besides the areas allotted to the Municipal Offices, there are provided on the ground floor a spacious public library and reading-room, together occupying 5,260ft., and an additional space under the great hall of 1,100ft. for store-room purposes. On the principal floor, in addition to the Borough Court, borough engineer's offices, surveyor's offices, &c., there is a great hall, 129ft. by 70ft. 7in., including an apsidal projection at one end to receive the organ. This room accommodates 2,000 persons. It is 60ft. high to the panels in the coffered ceiling, round which is a cove, pierced by semi-circular windows that light the hall above the adjoining roofs. On this floor are also placed the Mayor's reception-room, parlour, and banquet-room; also a Council Chamber, Committee-rooms, and School Board offices. The style is Roman, entirely carried out in Portland stone. A rusticated basement, with a plinth, above which are the ground-floor windows, reaching to the surbase, 17ft. from the ground level, runs all round the building. From this surface starts the order of columns and pilasters, also surrounding the building. These are 3ft. 4in. in diameter, and 10 diameters in height, and run through two floors, with a stringcourse marking their division, the surbase marking the level of the principal floor. The columns and pilasters carry an entablature and a balustrade. In the centre of the east front, and standing 21ft. in advance, is a hexastyle portico 57ft. wide, reached by a pyramidal range of steps. At each side of the portico is a loggia 57ft. long and 6ft. 6in. deep, with four columns in each, and double pilasters at the angles. In the centre of the east front, immediately behind the portico, rises the clock tower, the lower stage rising without a break for 29ft. It terminates in an open cupola, the whole reaching to a height of 206ft. from the ground. The building has been erected from the designs of the late Mr. William Hill, of 25, Park-square, Leeds, and finished from the drawings and details

prepared by his son, Mr. William Longfield Hill, who was appointed by the Council, in conjunction with Mr. C. W. Bevis, of Southsea, as resident superintendent architect to complete the works. The contractors for the whole of the works are Messrs. Armitage and Hodgson, of Camp-road, Leeds. The sub-contractors were—plumber and glazier, Messrs. H. Braithwaite and Co., of Swinegate; plasterer, Mr. J. P. Mountain, of St. Paul's-street; slaters, Messrs. Pickles Bros., Canal Basin; and stained glass, Mr. G. Lazenby, Connaught-buildings, all of Leeds. The total cost of the building will be about £120,000, exclusive of land. The quantities were supplied by Mr. Linley Oldroyd, of Leeds.

Poplar.—The new church of St. Frideswide, Follett-street, Poplar, for the Christ Church Oxford Mission, was recently dedicated by the Bishop of London. The church accommodates about 600 people, and is of brick, faced externally with red bricks with Chilmark stone dressings. The cost was about £3,600, or about £6 a sitting. It consists of nave and chancel under one roof, with a narrow aisle on the north side, which will be used as a morning chapel. The choir and clergy vestry are placed outside the east end, which terminates in an apse. The nave and chancel are 38ft. wide. The altar is raised ten steps above the nave, giving it a very bold aspect. The organ-chamber is situated in a small transept on the north side. The site, which is very cramped, is wholly taken up by the church, except a portion at the west end, on which a narthex is to be erected when funds permit; the space is now partly occupied by a temporary iron porch. The building has been erected from the designs and under the superintendence of Mr. R. Willey, F.R.I.B.A., 66, Ludgate-hill, E.C.

CHIPS.

The pictures which Sir F. Burton has bought of the Earl of Darnley with part of the annual grant to the National Gallery are two by Paulo Veronese and one by Tintoretto; they are about 6ft. square each, and were exhibited with other pictures from Cobham Hall at the Royal Academy in the winter of 1877. They will shortly be hung at the National Gallery.

The town council of Bathgate, near Edinburgh, have adopted a drainage scheme for the burgh prepared by Messrs. J. and A. Leslie and Reid, of Edinburgh.

At Tipperary Petty Sessions on Friday, Mr. R. R. Gill, architect, New Tipperary, was sentenced to fourteen days' imprisonment, with hard labour, and to keep the peace for twelve months, on a charge of assault. Constable Smith swore that the accused, when passing along the street, deliberately struck his left shoulder against him. Mr. Gill declared that the officer refused to make way for him, whereupon he simply brushed against the constable when passing.

An infirmary and isolation wards are being added to the workhouse at Cuckfield at a cost of about £3,800. Mr. William Beach, of Hayward's Heath, is the architect, and Mr. W. Pledge, of East Grinstead, the contractor.

The Linsdale Institute, Leighton Buzzard, is being warmed and ventilated by Mr. E. H. Shorland, of Manchester, by means of his patent Manchester grates and inlet and outlet ventilators.

Extensive alterations and additions have been made to the Primitive Methodist Church, Exmouth, Devon. The chapel and schoolroom have been lengthened by about 30ft.; new gallery erected with ornamental gallery front of horseshoe shape (made by McFarlane and Co., of Glasgow); open colonnade built in front of church, and in the rear five new classrooms, minister's vestries, &c. The church has been re-seated throughout with new rostrum, &c., all in pitch-pine. Messrs. Kerley and Ellis, of Exmouth, are the architects; and Messrs. Cooper and Son the builders.

The Bristol Docks Committee received, on Monday, a letter from Mr. J. Ward Girdlestone, tendering his resignation of the appointment of engineer to the Bristol Docks, an office which he has held for the past eight years.

The town council of Stirling have deferred to a committee the consideration of the advisability of restoring the old Mercat Cross on its original site in the centre of Broad-street. The cross was erected in 1473, and was taken down in 1793.

Mr. Lynch, Hillford-road, Hampstead, was, at the Marylebone Police-court on Tuesday, fined five pounds and costs for neglecting to put into proper repair the drains of 16, Queen's-crescent, Haverstock-hill. The premises, said to be ill-ventilated and full of sewer gas, were used as a bakehouse.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

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The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

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The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLI., XLIX., L., LI., LIII., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—L. G. I. Co.—M. Bros. and Co.—J. D. and Co.—C. of B.

Correspondence.

COTTAGES WANTED.—TO BUILDERS.

To the Editor of the Building News.

Sir,—I should be obliged if you would allow me sufficient space in your next issue to direct the attention of capitalists to the crying need for additional cottage property in this part of my parish. The opening of the new railway-station in the village and the development of the Dock estate have caused such an increase of population that I do not know of a vacant cottage within a radius of two miles—and several places that are called such are scarcely habitable.

The wealthy and enterprising firm who are at present expending over £7,000 per annum in wages at the Dock estate tell me that they suffer inconvenience from the lack of insufficient dwellings for their workpeople. If instead of multiplying houses where there are already too many, respectable builders would direct their energies to this field of speculation, it would be found more profitable to themselves and more beneficial to the cause of Christian philanthropy.—I am, &c.,

John J. Stevenson Moore,
Vicar of Dagenham.

The town council of Coatbridge, N.B., accepted at their last meeting the offer of Mr. John A. Warren, of Glasgow, to provide a survey plan of the burgh for the sum of £585.

New elementary school buildings will at once be proceeded with at Ashton-in-Makerfield, from the designs of Mr. Thomas W. Cubbon, architect, of Birkenhead, and will be erected at the expense of Miss Evans, of Rainhill. The schools have been designed to accommodate about 650 children, and will be two stories in height. The ground floor will be devoted to the infants' department, and the first floor used as a mixed school. The buildings will be faced with Ruabon bricks—the dressings of red sandstone. The cost is expected to be about £4,000.

Intercommunication.

QUESTIONS.

[10342.]—**Sanitary.**—I shall be glad if some reader could tell me the name of the plant or weed which, grown in a sewage-pond, helps to deodorise the contents?—H. O.

[10343.]—**Falmouth.**—Can any reader give me any information as to architectural works worth visiting near Falmouth?—H. G.

[10344.]—**Coke Breeze Concrete.**—I have a specification worked from in 1887, in which some floors are described as having some coke-breeze concrete 6in. thick, covered with ½in. thick of pitch, and then floor boards laid on and nailed. Will some reader kindly say how the pitch should be used, and if it will require mixing with any other substance to make it work?—L. S. N.

[10345.]—**Colouring Cement.**—Can anyone inform me what method I should employ to colour cement a buff tint, and whether, if so tinted, it is better to use Robinson's cement or the ordinary Portland-cement? The work is required on the upper part of a cottage gable.—Westlake.

REPLIES.

[10323.]—**Posts of Wood, Strength of.**—J. McA. has omitted several items in his quotation of formulæ for the breaking weight of pillars of wood. Hodgkinson's formula for solid square dry red deal columns with both ends flat, *when the length exceeds* 30 *diameters* is $W = 7{\cdot}81\frac{D^4}{L^2}$. This does *not apply* to pillars shorter than 30 diameters, but in such cases must be corrected by the formula $W' = \frac{W \times c}{W + \frac{3}{4}c}$, where W' = true breaking weight W = breaking weight as found by formula for tall pillars, c = the crushing force in tons for one square inch in section of the material × *sectional area of column in inches.* The definition of this factor c is imperfectly described in the reply referred to, though the working out is correct; hence, perhaps, J. McA.'s failure to understand its application. Hodgkinson considered the pillar as having two functions, one to support and the other to resist flexure, so that when the pressure necessary to break the pillar is very small on account of the greatness of its length compared with its lateral dimensions, then the strength of the whole transverse section of the pillar will be employed in resisting flexure; when the breaking pressure is one-half of what would be required to crush the material (in lengths between 10 and 30 diameters) one-half only of the strength may be considered as available for resistance to flexure, whilst the other half is employed to resist crushing; and when through the shortness of the pillar (lengths under 10 diameters) the breaking pressure is so great as to be nearly equal to the crushing force, we may consider that no part of the strength of the pillar is applied to resist flexure. Thus he assumed that the real breaking weight would be equal to the breaking weight as obtained for the long column (yielding by bending only) multiplied by the force requisite to crush it without flexure; and divided by the same two quantities added together, minus the pressure which it would support as flexible, without being weakened by crushing. Applying the above formulæ to the given example—

$$W = 7{\cdot}81\frac{10^4}{10^2} = 781$$

$$W' = \frac{781 \times 2{\cdot}5 \times 100}{781 + \frac{3 \times 2{\cdot}5 \times 100}{4}} = 201{\cdot}6 \text{ tons,}$$

when crushing strength of small section = 2½ tons per square inch, or 232·9 tons if crushing strength = 3 tons. The other formula quoted by J. McA. is that of Mr. Lewis Gordon deduced from Mr. Hodgkinson's experiments, with Weisbach's value of constant a; d = least thickness of rectangular pillar *in inches*; S = sectional area in square inches, and the other factors as given. Applying this:—

$$W = \frac{2{\cdot}5 \times 100}{1 + \frac{120^2}{250 \times 10^2}} = \frac{250^2}{394} = 158{\cdot}6 \text{ tons.}$$

When F = 2½ tons, or 190·36 tons when F = 3 tons. The factor of safety should be taken as $\frac{1}{10}$ breaking weight.

Pillars of wood are seldom *fixed* in the sense used in formula—i.e., by having flat capitals and bases, therefore their strength is reduced in such cases to considerably less than that given by the above formulæ.—F. E. Gay.

[10325.]—**Landscape Gardening.**—"Iota" would do well to consult Repton on "Landscape Gardening," and Milner's work on the same subject, lately reviewed in the Building News. The principles may be soon mastered; but I should recommend "Iota" to observe and study the effects of landscape, those of paths and drives upon undulating ground, clumps of trees, as they appear in connection with buildings.—G. H. G.

[10328.]—**Ripon Minster.**—This cathedral is collegiate. The crypt is Early Norman, also the chapter house, date 1069-1100. The Lady-chapel is Late 15th-century. The west front and towers are Early English. Transepts and choir date from 1154, eastern part of choir, 1233-1300 There is an Early Decorated east window. The choir aisles are 14th century. Nave dates from 1460-1520. The lancet windows of west front were filled in with Decorated tracery, it is thought, by Wykeham, but in the recent restoration the original lancet windows were restored. Archbishop Walter Grey, who built the south transept of York, the choir of Southwell, was the builder. Illustrations have appeared of this edifice in the Building News. Sir G. G. Scott restored the cathedral 1861-1872. The central tower, which fell, was rebuilt in 1459. See Walbran's "Ripon."—G. H. G.

[10329.]—**Sanitary Authority.**—"Tenant" can certainly apply to the sanitary inspector.—H. L.

[10330.]—**Rolled Iron Joists, &c.**—The general

formula for finding area of either of flanges at centre of girder supported at both ends is $\frac{W\,l}{8\,s\,d} = a$. Where W = live and dead loads distributed in tons, l = span in feet, d = depth in inches, and s = safe strain per square inch of metal on the flange in tons. I would recommend "Student" to get one of Homan and Rodgers, or Measures Bros. and Co.'s illustrated tables of the safe loads on thin rolled joists for different spans and loads, as this means of ascertaining would be more re iable than any formula worked out. These are a few examples of safe load for a 10ft. length of joist. If breadth of flange is 3in., depth of joist 5in., thickness $\frac{3}{8}$in., the safe load is 1·15 tons. For a 4in. breadth of flange, 8in. depth, and $\frac{5}{8}$in. thickness, the safe load is 3·6 tons; for 5in. breadth, 10in. depth, and the same thickness, the safe load is 5·8 tons. A joist 6in. broad on flange, 12in. deep, and $\frac{3}{4}$in. thick, will bear safely 11·0 tons. Hurst gives the following formula when the depth is more than $\frac{L}{14}$. Breaking weight in tons in centre $= C\,\frac{A\,D}{L}$ where A = area of bottom flange in inches, including one-fourth of whole depth of joist, C = constant = 7 for rolled iron, D = depth of joist in inches, and L = length in feet.—G. H. G.

[10331.]—**Church Needlework.**—In answer to "Designer's" query *re* church needlework, I beg to be allowed to inform him that Mrs. Austen, 35, Castle-arcade, Cardiff, designs and executes altar-frontals, hangings, &c.; and can give him any information thereon. —Ecclesiasticus.

[10333.]—**Rood-Screen.**—A very fine example of a rood-screen in oak is to be seen across the chancel of the new church of St. Agnes, Kennington Park. The church is a good example of modern erection, designed, I believe, by Mr. J. Oldrid Scott. Fine brass-work grilles or panels fill the lower compartments of the open screen; the rood-loft or beam is supported by richly-groined arches; and above it is a large carved crucifix, with carved figures on either side of the Virgin and St. John, painted and gilded. Several fine examples are to be seen in Devonshire and Norfolk.—G. H. G.

[10334.]—**Design not Carried Out.**—"Young Architect" is entitled to charge 3 per cent. on the whole tender, and an additional 2 per cent. on the amount of the work not carried out.—H. L.

[10337.]—**Stoup**—Is a small basin to contain consecrated water placed on the right-hand side of the entrance to a Roman Catholic Church. Parker, in his "Glossary," gives several English examples. Sometimes they are formed in a small niche, like a piscina, other examples are hollow projecting basins like corbels.—G. H. G.

[10338]—**Beam.**—Let A B be the beam 32ft. long, of which the portion A C, 24ft. long, is uniformly loaded with 1½cwt. per foot run. This is equal to the total load of 30cwt. (34 × 1½) acting through its centre of gravity, which is at a point 12ft. from A and 20ft. from B. Therefore—

$$\text{Reaction at A} = \frac{30 \times 20}{32} = 18\tfrac{3}{4}\text{cwt.}$$

$$\text{Reaction at B} = \frac{30 \times 12}{32} = 11\tfrac{1}{4}\text{cwt.}$$

H. Carter Pegg.

[10338.]—**Beam.**—A beam 32ft. span loaded with 1½cwt. per foot run to within 8ft. of one end, will have a reaction at the loaded end of one ton, and at the other a reaction of half a ton approximately.—S. S.

[10340.]—**Board Schools.**—Robson's work on School Building is one of the most comprehensive and best treatises, 2nd edition published in 1877. For technical schools, E. C. Robins's "Technical School and College Building" may be consulted.—G. H. G.

CHIPS.

The school board for Ecclesfield, near Sheffield, have adopted plans by Mr. G. A. Wilson, of Sheffield, for a new girls' school at Hillsborough.

Mr. Wineberg, a master cabinetmaker, was summoned, at the Worship-street Police-court, on Saturday, for non-payment of wages to a workman, who was one of a group put upon work at a price stipulated. An increase of remuneration was demanded, and refused. In cross-examination, witness admitted having written a letter to the newspapers stating that he would like to hang all Social democrats. The summons was dismissed.

A neolithic cave burial has been discovered at the Distillery at Oban. A few stone implements, many human and some animal bones, and *débris* of shell-fish have been found.

On Sunday afternoon the Bishop of Shrewsbury laid the foundation stone of a new church for the Roman Catholics in Gatefield-street, Crewe. When completed the church will consist of chancel, side chapels, nave, aisles, baptistery, external porches, confessionals, &c., with priests' and working sacristies connected to the presbytery by a cloister. The height to the top of the tower will be 90ft. The cost will be about £4,500.

The name of Alderman George Kett, of Cambridge, of the well-known firm of wood-carvers, has been added to the commission of the peace for that borough.

Additions have been made to Messrs. Hodgson's Brewery, Kingston-on-Thames, and special attention has been paid to the ventilation, which is carried out on the Boyle system, the extraction of the vitiated air being effected by the latest improved form of the Self-Acting Air-Pump Ventilator.

Our Office Table.

Members of the Society of Architects who propose to take part in that body's well-planned excursion into Kent will probably be interested in looking up and reading our issues of August 6, 13, and 20, 1886, wherein the visit of the Architectural Association to Maidstone and Rochester was fully described and illustrated. The ground covered by both societies is very largely the same, Tonbridge, Knowle House, Ightham Mote, and Sevenoaks being items in each programme, in addition to the county town and city already named.

The Government have decided to utilise the eastern and western galleries at South Kensington as the National Gallery of British Art. A connecting gallery will be made, with a central hall for sculpture, and the buildings will be united with Mr. Collcutt's Imperial Institute, a façade being made to each gallery in harmony with the Institute. In accordance with suggestions made by Captain Shaw, some slight alterations will be made to render the building more nearly fire-proof. Curiously enough no architect was included among the experts (five in number) called in to advise the Lord President of the Council and the Chancellor of the Exchequer as to the suitability of the buildings for their intended purpose. It is satisfactory to find that the gallery will not be under the control of the Science and Art Department, but will be managed by an independent board.

The twelfth annual congress of the Sanitary Institute will be held at Brighton next week. The meetings for addresses, papers, and discussions will take place in the Pavilion-buildings, and a Health Exhibition will be arranged in these buildings, the Corn Exchange, and Museum, remaining open until September 13th. At the opening meeting on Monday evening an address will be delivered by Sir Thomas Crawford, M.D., and on Tuesday, Section I., "Sanitary Science and Preventive Medicine," will be inaugurated by an address from Dr. G. Vivian Poore, and will be followed by papers and discussion. Professor T. Roger Smith, F.R.I.B.A., will open Section II., "Engineering and Architecture," by an address on Wednesday morning, and papers and discussions will follow on that day and on Thursday. A conference of medical officers of health will also be held on Thursday, and on Friday, Section III., "Chemistry, Geology, and Meteorology," will sit under the presidency of Mr. William Topley, of the Ordnance Survey, and a conference of inspectors of nuisances will take place. On Saturday sundry excursions will be organised, and in the evening Dr. B. W. Richardson will deliver an address to the working classes in the Town Hall, in which he may be expected to develop some new Utopian suggestions.

At the recent meeting of the British Medical Association at Birmingham, a resolution was passed: "That this public medicine section of the meeting of the British Medical Association approves of the system of education, examination, and registration of plumbers, and of the formation of a committee and local centre for the purpose in Birmingham, and expresses its hope that the memorial addressed to the Plumbers' Company be approved and acted on in the interests of public health."

At the last meeting of the Privy Council on Education a letter was read from Mr. Z. Mellor, town clerk of Rochdale, dated the 8th inst., stating that the town council of that borough proposed to make grants under the powers conferred upon them by the Technical Institution Act 1889 to certain institutions in Rochdale for the promotion of technical instruction, that at one of these institutions instruction was given in the following subjects, which are not included in the branches of science and art with respect to which grants were at present made by the Department of Science and Art—viz. (1) cotton-spinning, (2) cotton-weaving, (3) cloth-weaving, (4) plumbers' work—and that in the opinion of the town council such a form of instruction was required by the circumstances of its district. The education committee sanctioned the form of instruction, and will lay a minute before Parliament to that effect.

The first architectural exhibition yet organised in Italy will be opened at Turin next month. It will be inaugurated on Saturday, Sept. 20th, and will close on November 28th. In the International Division, the section will comprise:—1, plans for cities; 2, projects for enlargement and general and partial sanitary regulations; 3, complete designs for edifices, as regards ways and means of construction; and, 4, rules and regulations for buildings. Medals and diplomas will be awarded by an international jury. All intended exhibits must be forwarded prepaid to the Committee before Monday week, September 1st.

LEGAL INTELLIGENCE.

£100 Damages for Defective House Drainage.—At the Leeds Assizes, held last week, before Mr. Justice Wills and a special jury, Henry Brumby, builder and contractor, of Sheffield, was sued by George Baruch Wood, mechanical engineer, and his wife, for damages for breach of contract, and also for alleged fraudulent misrepresentation upon the sale of a house in Machon Bank-road. Defendant sold the house to plaintiff, and stated that the drains were all right; but plaintiff and his wife, who took no formal warranty, were rendered seriously ill as a consequence of the defective drainage. Mr. Charles F. Wike, now, and for the past two years, borough surveyor of Sheffield, deposed for plaintiff that, after examining the property in February last, he wrote the defendant complaining of the unsatisfactory manner in which the drains had been laid, but he received no reply to that communication. Witness refused to give a certificate that the house was fit for habitation, and ordered the plaintiff to uncover all the drains for inspection. They were subsequently relaid, in accordance with the requirements. Defendant said he personally inspected the works while the house was building, and was informed by his men that an inspector of the corporation had passed them. He thought the drainage was efficient in every way. He had been in business for 25 years, and had erected over 120 houses. He had a dozen or more houses inhabited now, for which he had no final certificate from the borough surveyor. In the end, the charge of fraudulent representation alleged against defendant was withdrawn, and he then agreed to a verdict against him of £100 damages, carrying costs.

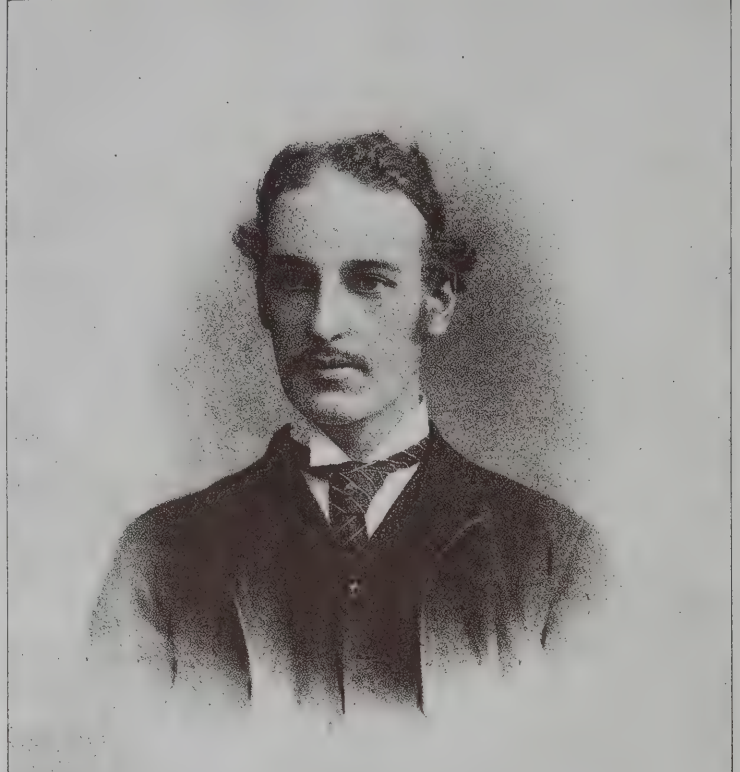
Serious Charges against a Builder and Plumber.—Wm. Davis, 44, builder, of Queen's-road, Upton Park, and Thomas Raisbeck, plumber, of Gartary-road, Canning Town, were charged at Westminster Police Court on Friday, on a warrant, with being concerned in obtaining a large quantity of goods by false pretences from Messrs. Burt and Potts, wholesale ironmongers, of York-street, Westminster, and also from Messrs. Farmiloe, glass and lead merchants, of Rochester-row, Westminster. On the 7th inst. the prisoner Davis, with a hired van, proceeded to Messrs. Burt and Potts' establishment, and obtained over a ton of iron hooping and rods on account of Messrs. Prestige and Co., well-known customers of the firm, from whom, however, it was stated he had no authority whatever. By a similar misrepresentation he was said to have obtained kegs of white lead, colours, varnish, solder, oil, brushes, &c., of the value of £34, from Messrs. Farmiloe. These goods were carted away, some ostensibly to a job at Hendon, but in reality to the prisoner Raisbeck's house, where a detective discovered rolls of zinc in different rooms, besides twenty-two painter's brushes under a bed, all identified as the property of Messrs. Farmiloe and Co. Prisoners were remanded.

WATER SUPPLY AND SANITARY MATTERS.

Duffield Waterworks.—The Belper Rural Sanitary Authority have instructed Mr. W. H. Radford, C.E., of Nottingham, to report on the best mode of obtaining a water supply for the villages of Duffield and Duffield Bank, in Derbyshire.

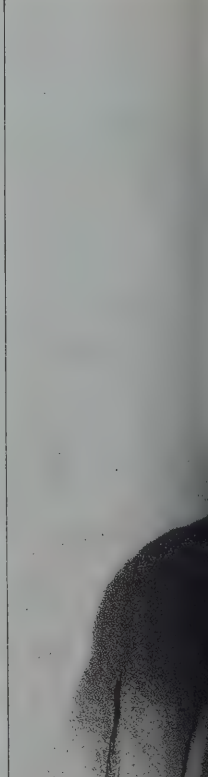
A Seamen's Institute is about to be built at Cardiff, in Bute-crescent, replacing the old man-of-war *Thisbe*. The new building will have, on the ground floor, the seamen's institute and reading-room, accommodating 400 people; the chaplain's room, and caretaker's apartments. On the first floor will be a church seating 450 persons. The building will be constructed of ballast stone, with brick facings, and a red-tiled roof. Mr. E. W. M. Corbett is the architect.

The restoration of Hanmer church, which was destroyed last year by fire, is approaching completion. The new bells have been swung. During the past month some interesting relics have been brought to light. In a small hole of the tower was found a casting of a rose in plaster of Paris, with the date 1644 scratched on the side of the block. In the foundations of the south wall has been found a window-sill with a single light in a deep red stone.

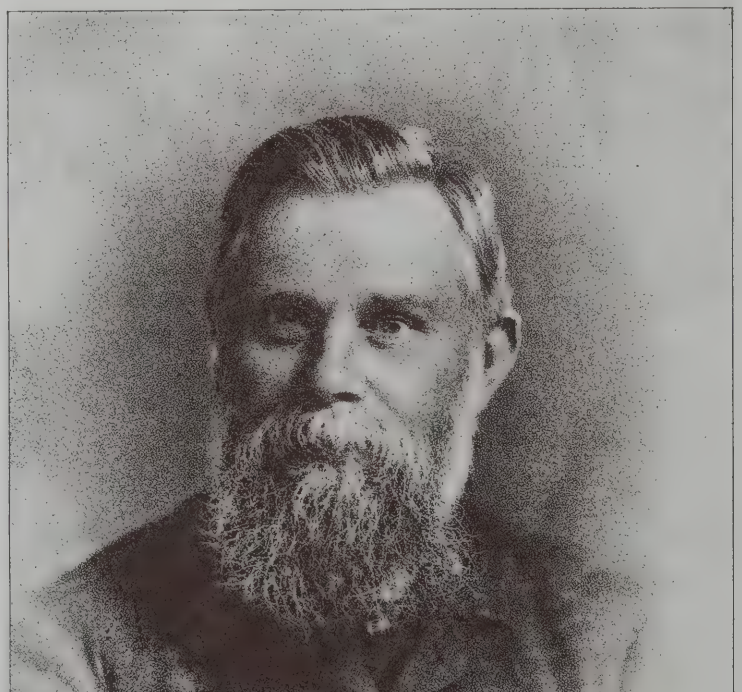


H. Paul Williams

MR. H. PAUL WILLIAMS. (MESSRS PILKINGTON & Co)



MR J. T. B

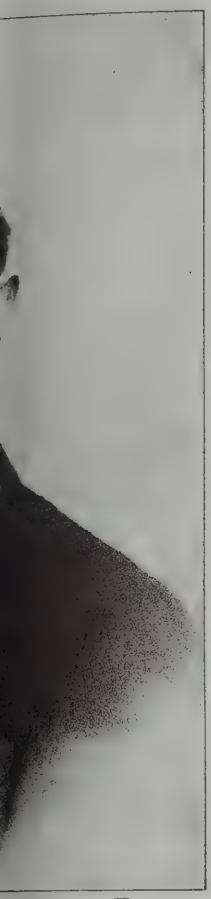


W. Letheren

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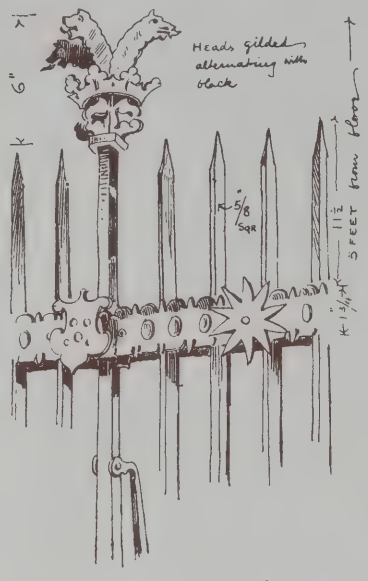
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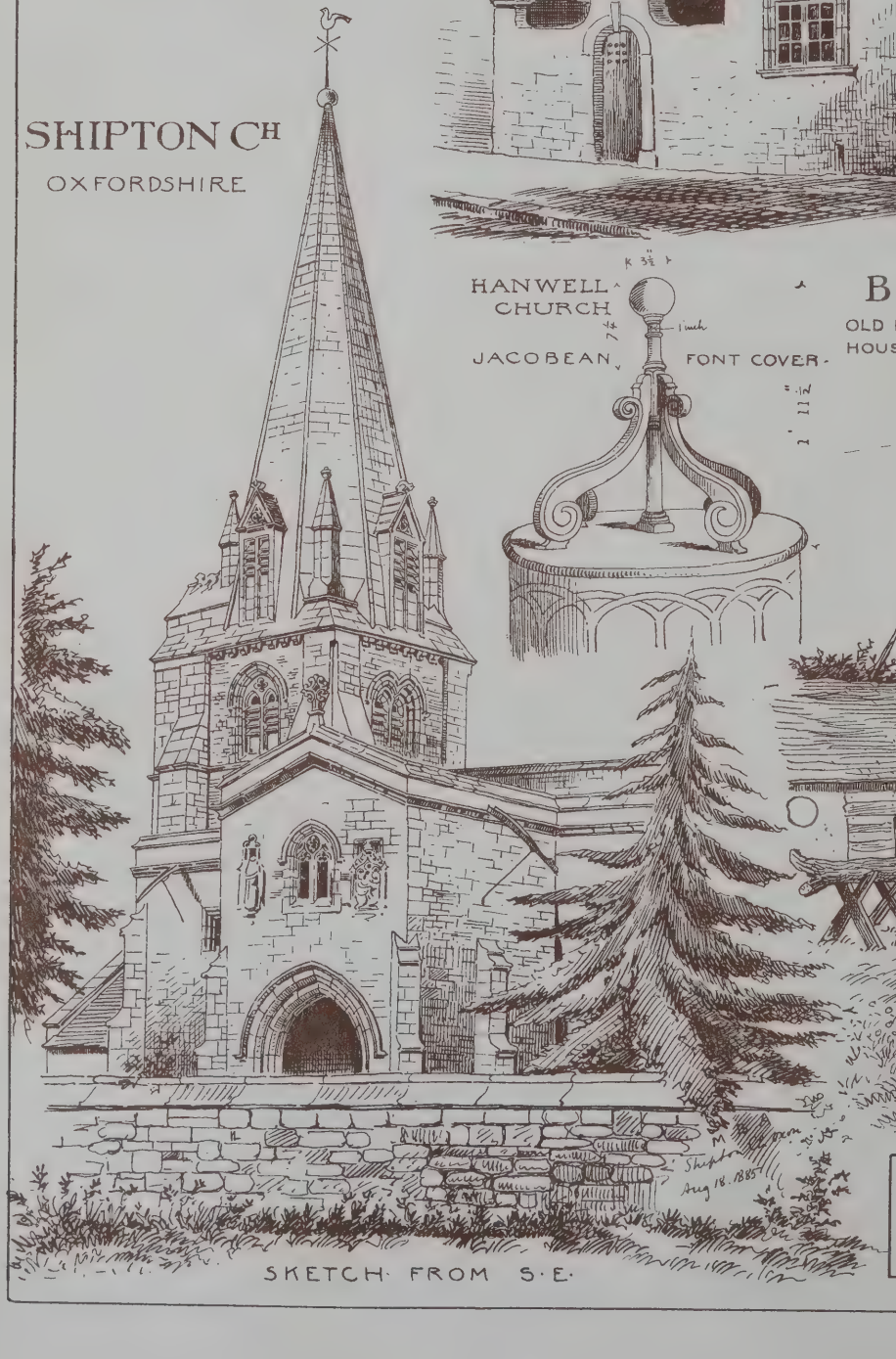
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SHIPTON CH

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SKETCH FROM S·E·

HANWELL CHURCH
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OLD 17TH CENTURY STONE-HOUSE IN THE HIGH STREET



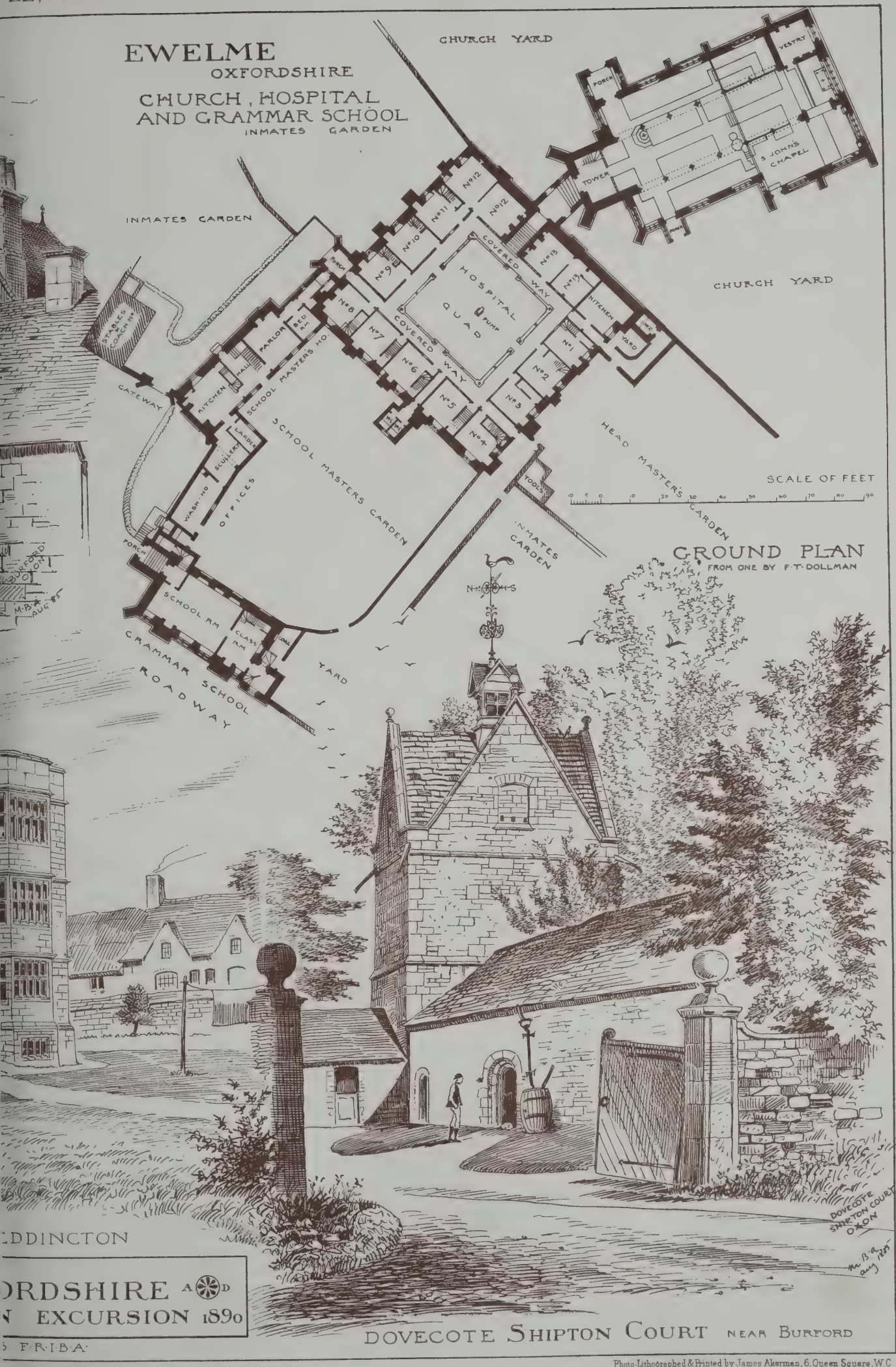
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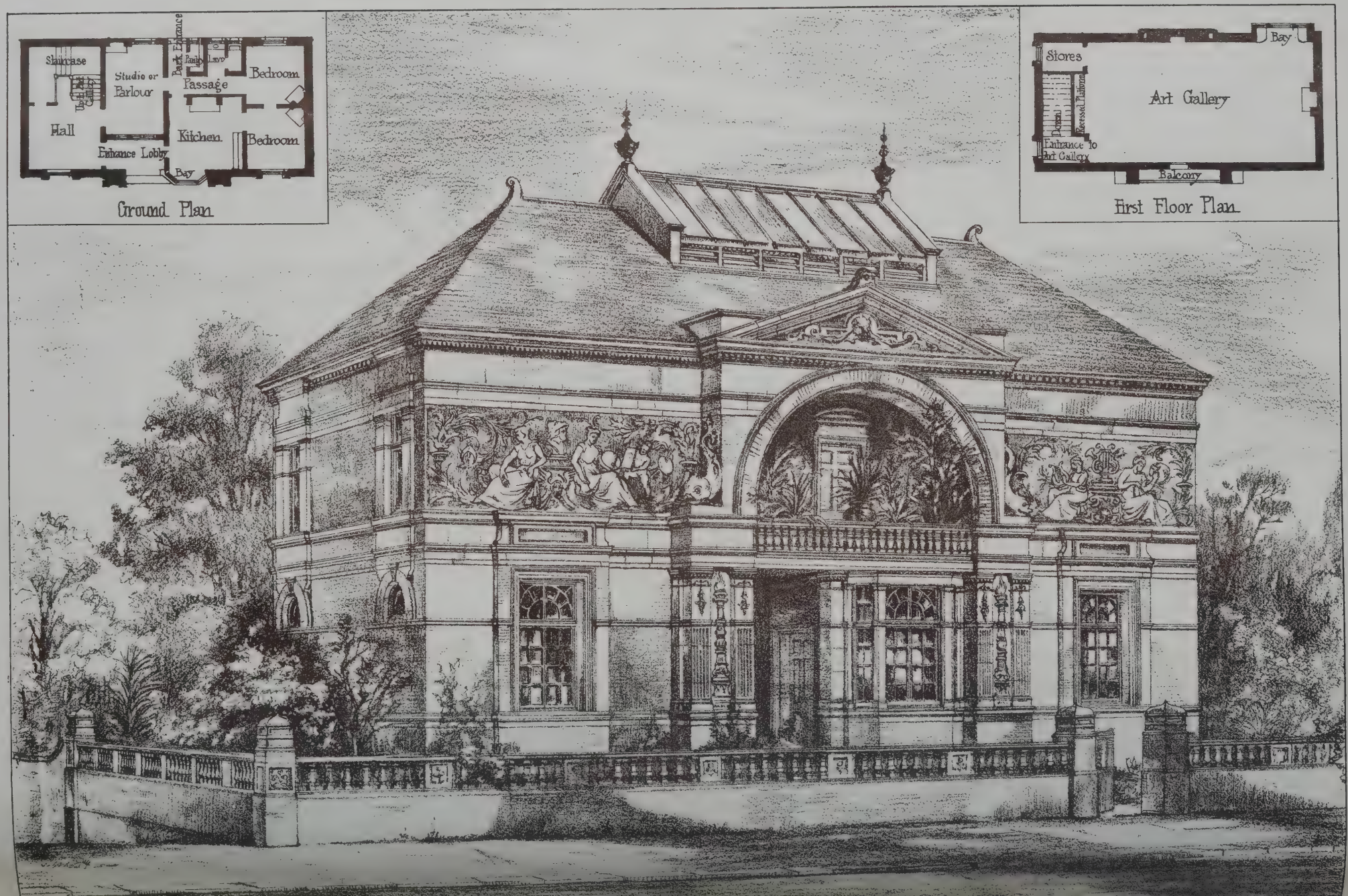
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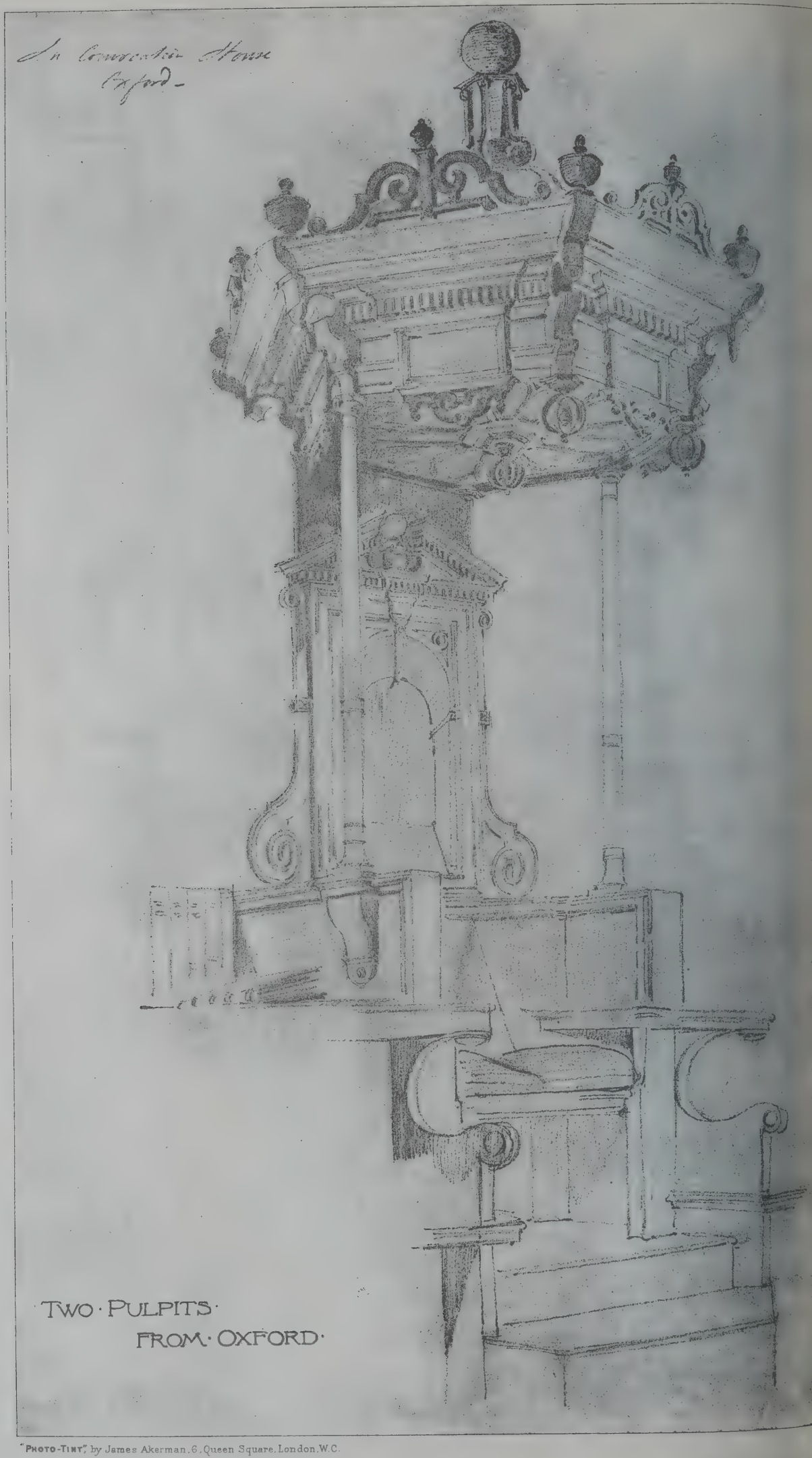
ORDSHIRE AND
N EXCURSION 1890

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DOVECOTE SHIPTON COURT NEAR BURFORD

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

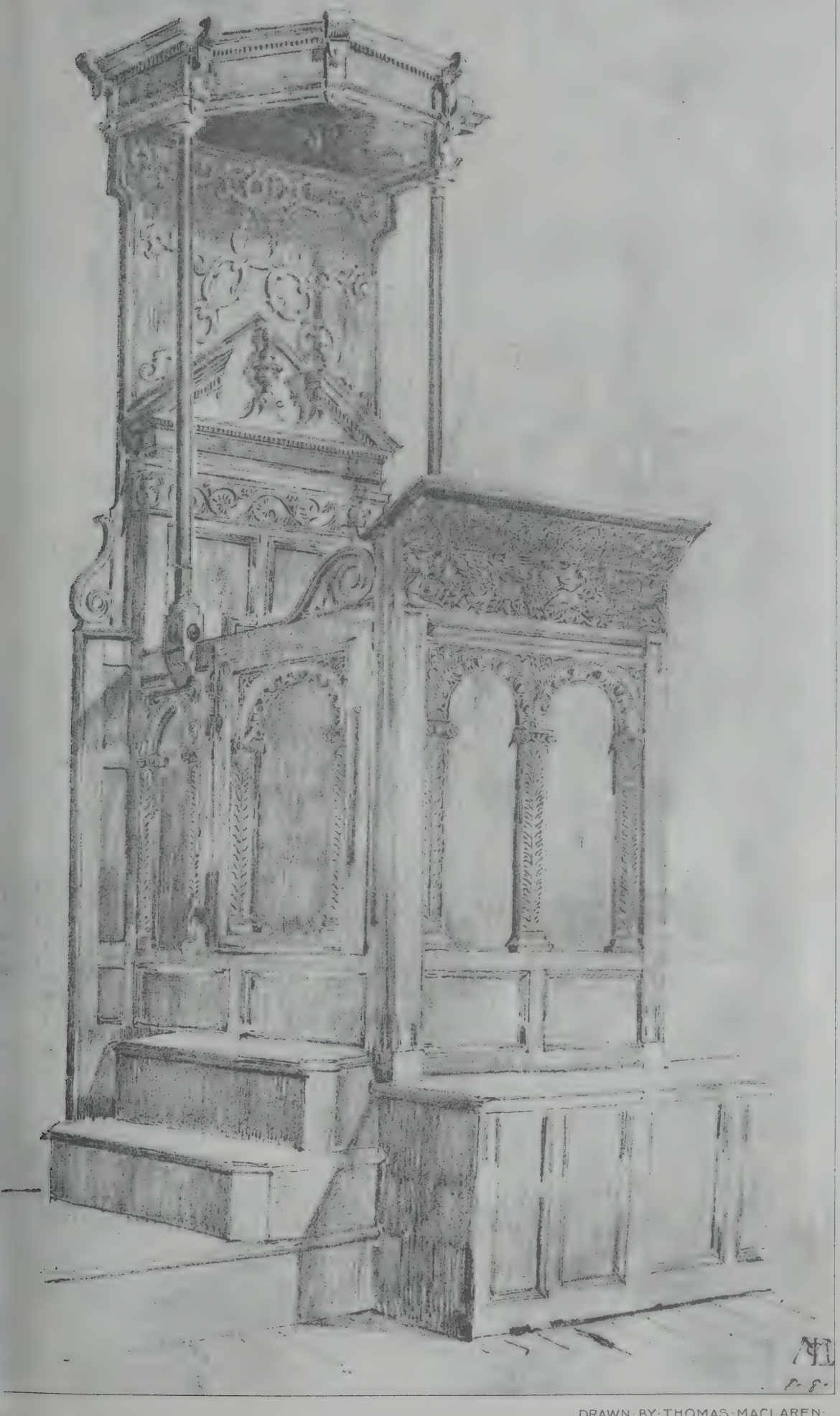

Staircase
Studio or Parlour
Dark Entrance
Passage
Bedroom
Hall
Entrance Lobby
Kitchen
Bedroom
Bay
Ground Plan
Stores
Bay
Art Gallery
Recessed Platform
Entrance to Art Gallery
Balcony
First Floor Plan



TWO · PULPITS ·
FROM · OXFORD ·

"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

Christ Church Cathedral
XFORD



DRAWN BY THOMAS MACLAREN



THE VICTORIA HOSPITAL FOLKESTONE THE CENTRAL BUILDING JOSEPH GARDNER ARCHITECT FOLKESTONE

Photo-lithographed & Printed by James Akerman, 6 Queen Square W.C.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LIX.—No. 1860.
FRIDAY, AUGUST 29, 1890.

THE BUILDING OF BASEMENTS.

OF the many problems of building that present themselves to the architect in owns, the design and construction of a eally well-lighted sanitary basement is one f the most important. But sanitary experts nd architects have alike failed to make the nderground stories of buildings what they night be made. The views of Dr. Richardson, xcellent as they are, appear to have had ittle effect in regard to house-building, and he hygienic models and house arrangements hown at the late Health Exhibition at South Kensington, are a long way from being ealised. The Sanitary Congress, now holding ts meetings at Brighton, have been consider- ng the question of basements and overcrowd- ng; but the practical part of the problem has carcely been dealt with. And yet we have ll the necessary elements of hygienic onstruction. We have a system of house- rainage which can be made absolutely erfect, by which the house can be cut off rom the sewers, and means of excluding urface water; we have damp-proof materials or building walls, damp- and air-courses o prevent the absorption of moisture rom the ground, systems of hollow walls, hich practically admit air currents and ntercept the damp from the inner portions; e have means of reflecting or refracting ght into basements by "semi-prism" lights; ooring of improved construction—all of hich things we can introduce. Still we ppear to be practically unable to employ ese things to the best advantage, or we omit o do something upon which the success of e other expedients greatly depends. As the ealth and comfort of a building so largely epend on the manner in which the founda- ons and external walls are constructed, so as o cut off the soil and its moisture and emana- ons from the upper floors, it seems to us ecessary for architects to direct their atten- on to the discovery of some more efficient ethod of building than that usually adopted.

In the first place, the idea of erecting our uilding on stilts or piers would be practi- able if it could be shown what use could be ade of the lower stories. Where store- oom was required this mode of building is o doubt reasonable, presuming that access the first-floor can be gained without fficulty. In some districts, in which the vels are low, the raising of the bottom oors of houses appears to be the only pre- aution that can be taken with any hope of vercoming the inundations caused by heavy ainfalls and high tides. If, as suggested in ese pages before, the level of our roadways ould be adjusted to the buildings on each de, and the pedestrian and carriage traffic onfined to a high-level road and footways, iving access to the ground floor of the reet buildings, and the heavy traffic made use a lower road on a level with the iginal ground, we might see a very de- rable reform in London and many of ur great commercial cities. Suppose, for ample, over the present level of Cheapside road and footways were raised clear of the uses by some feet on either side, and form- g a viaduct on iron girders some 12ft. or ft. above the level, with lateral bridges to e floors of the houses—let us imagine on eir first-floor level—immense relief would given to traffic. The lower or present round stories could be utilised as basement llars for storage of heavy goods, the high vel road made to serve the pedestrian and ghter traffic. The present lower basements, sometimes flooded, could be done away with. "High" and "low-level" roads would at once double the space, lighten traffic, and avoid accidents; but at present the idea is too Utopian to be entertained.

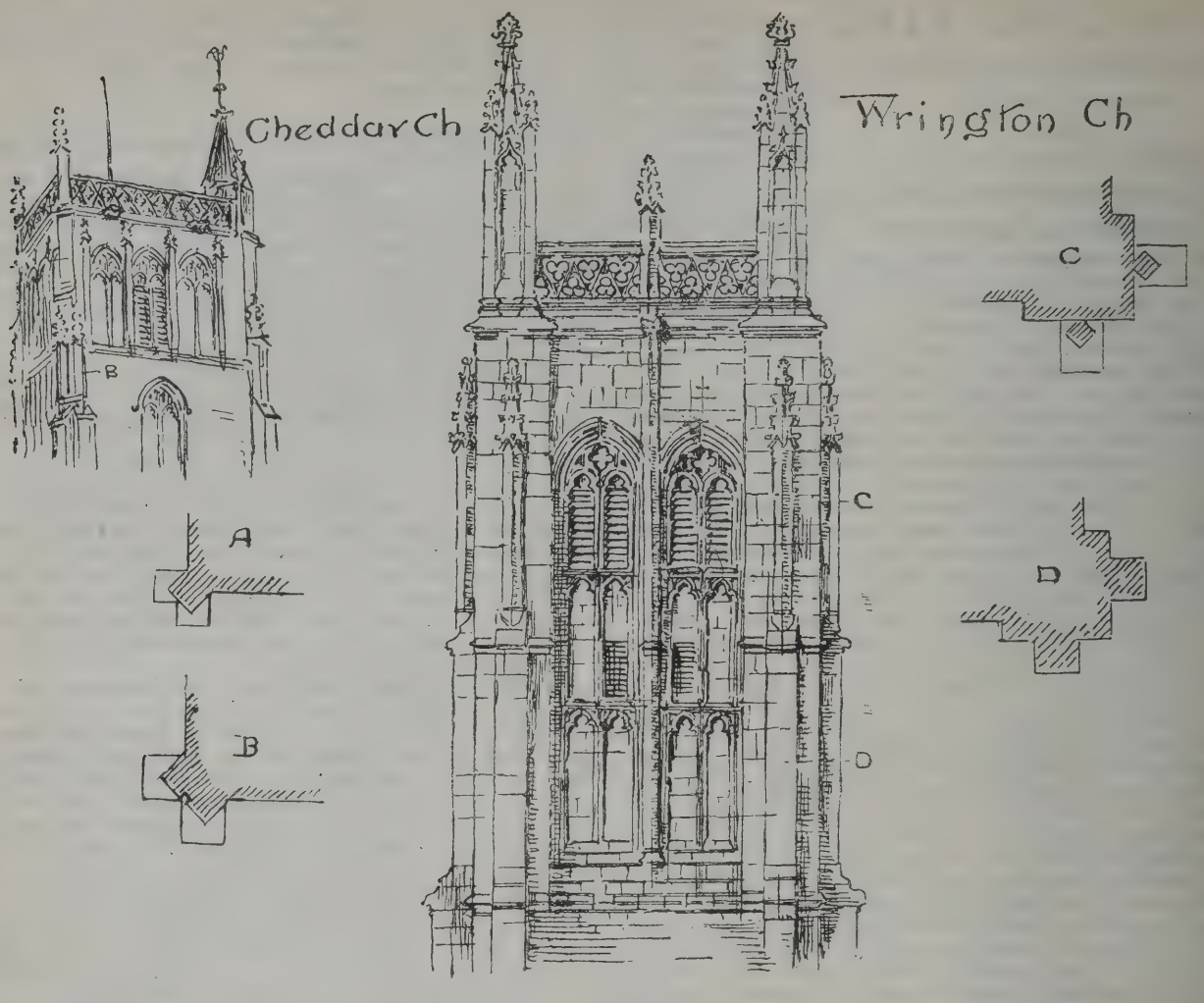
The question of how to build a basement below the ground level that shall be free from contamination of ground air and moisture, is the one which we now have to face. What should be the idea of a structure of this kind? The most feasible answer is that the lower story should be designed like a watertight tank, at least as high as the sills of the basement windows; that it should, if possible, be constructed in an air space or excavation larger in both directions. There should also be an air space below the floor. These requirements appear to suggest, instead of basement walls carried up from the foundation, a series of short piers and apertures, the joists resting on girders carried on the piers supporting the floor-joists or flat arches of the lower floor. Above the piers solid walls would be built within an area to the required height. Asphalte could be used to render the walls impermeable, as a lining on the outer side, or to fill up a cavity; the floor would be covered with the same material, or the wood-block flooring laid on it. In the impermeable walls, the fresh air could be introduced through channels in the walls from a higher level. Cement concrete offers itself as a valuable material with which to construct basement walls, as being less permeable than brick with mortar joints. The air space all round, or the area, would keep the inner room dry, and if water entered from the outside, or found its way up through the soil, the tank-like structure would resist all percolation. In towns the area all round could not be formed; but in front and rear, continuous areas would effectually exclude all flooding. Building legislation could make such construction absolutely invulnerable. We should like to know if the by-law proposed by the Local Government Board has been enforced in any town under the Public Health Act. This provision is that when the floor of the lowest story is below the level of the surface of the ground, so that the ground is in contact with the exterior of the wall—the said story is to be inclosed with double walls, having an intervening cavity of 2½in., extending from the base of such wall to 6in. above the surface of the ground adjoining. An asphalte or damp-course is inserted just above the highest course of footings, on a level with the concrete layer over the site. Upon this level the double or hollow wall is built to the required distance above the ground-surface outside, and another damp-course is put on. Thus the cavity and the lower and upper damp-courses completely cut off the interior wall from that against the soil. But does it? Actually, if there is any soakage matter or flooding outside, the outer wall of brick allows the water to percolate and fill up the cavity, and to permeate the inner thickness, so that the check is not a practically efficient one. The only way to make it so is to form an outer area, or to face the outside of wall with asphalte before filling in the earth. The outer air area is one of the desiderata of modern house-building, and it is one of the weaknesses of our legislation that it is not made compulsory in all cases. In streets the area could be covered level with the pavement by gratings filled with lens lights, and the walls could be built of concrete. This area need not be wide for the purpose intended. In the amendments to the Metropolitan Building Act we should like to see the question of basement construction taken up. It cannot be expected that our houses will be dry or healthy if the lower stories are sunk into damp sewage-saturated soil, and no care is taken to drain the soil below the floor level. These are points calling for immediate attention. Other towns will follow the example, if they see that the Metropolitan authorities have taken up the matter of underground stories.

TYPICAL CHURCH TOWERS.—I.

FEW features have received more attention from the artist's pencil than the tower. Poets have sung and painters depicted the beauties of structures that have served to awaken memories or rekindle the imagination, to give character to or throw a charm over the landscape. We might say much on the poetry of the tower as one of the phonetic elements of architecture; but we restrict our remarks to a limited branch of the subject. We desire to point out the distinguishing variations found in certain English towers, how much locality, circumstances, and materials have favoured distinct varieties. The Italian Towers or campaniles, such as the ruined towers of Pisa, of S. Apollinare ad Classem, Ravenna, and that of Sta Maria in Cosmedin have a fascination for architects and painters, and their beauties have been dwelt upon by many; but how comparatively little has been written on the church towers of our own country from an architect's point of view!

Our present remarks are confined to English types of towers, and we now refer *par excellence* to those of Somersetshire—a county noted for its noble and highly-wrought examples. Indeed the churches of this part of England are, perhaps, richer and fuller of interest to the architect and ecclesiologist than those of any other part. The prevailing Perpendicular style appears here to have attained its full beauty of expression in tower-building; for what towers elsewhere can we compare to those of Taunton, Wrington, and St. Cuthbert, Wells, for magnificent proportion and graduation of stories; or, as in the latter two instances, for the lofty belfry and its majestic vertical lines? The architects of these structures were masters of the art of tower-building; they appear to have reached perfection in the horizontal division into stages, and in the beauty of corner pinnacles and pierced parapets; and with the desire to do something bolder and more striking, they have thrown the last two or three upper stages into one by having two or three magnificent belfry windows, which give nobility and character to the tower as seen far or near. This change in the design of towers is one that seems to us to have been suggested in the first place by the desire to produce a more imposing simplicity than could be produced by a low belfry story or with small, short windows on the other plan, and possibly also to lighten the masonry by concentrating the bulk of the work in the angle piers.

The graduation of the tower into stages by horizontal divisions is necessarily one of the first considerations in the design of these structures, and the Mediæval architects early saw the value of dividing the stages to suit the perspective effect. Anything approaching equality of divisions was avoided; hence we find that the first story was made at least as lofty as that of the lines of the church parapets or ridges. The middle story was of less height—not more than half that of the lower—as we see in the tower of Huish Episcopi, a 15th-century example, crowned by a belfry story of greater height, and a richly perforated parapet, with battlemented crest and pinnacles. The three stories are harmonious in gradation, and the windows singularly well proportioned. More advanced is that of St. Mary's, Taunton, a later work (restored by Sir G. G. Scott), dating from about 1500, and divided into four stories, the two centre ones equal spaced, but barely exceeding together the lower story, and the upper belfry stage not quite equal to them in height, crowned also by a lofty pierced battlemented parapet, broken by



corner and intermediate pinnacles. It is interesting to compare these with the tower of New College, Oxford, a massive and simple work of about 1400, with its plain angles without buttresses, its two low centre divisions, and the small piercings of the three lower stories, not larger than loopholes, and its plain solid battlement at the top. Yet with its angle octagon turret it has a charm of its own—a charm derived to a large degree by the three horizontal string-courses, which divide the tower into four unequal stories. There is, perhaps, no rigid rule for this division, except the one that the lower and top stories should be of greater height than the intermediate, the greater height being given to the lower story. At Wrington, the belfry stage divides the tower into about two equal parts.

Another principle to which prominence is given in these examples is the arrangement of the windows. In some examples vertical lines bound the width of the windows from top to bottom—that is, the same width of wall or pier occurs on both sides of the openings, as we find at Huish, and St. Mary's, Taunton. In the last, vertical members engaged to the walls, finished as pinnacles at each story, divide the window spaces into two compartments in the three upper stories, the lower large window being in one, but of the same width as the total width of the two above. The same arrangement is seen in the tower of Wrington Church, where the wide Perpendicular window directly over the entrance is exactly the same width as the two lofty belfry panels or windows above. But this rule does not generally apply. The tower at Winscombe, a fine tower of five stages, has the windows of varying widths and sizes, the intermediate stages having small ones, as at Cheddar, St. Mary Hutton, and others. What is especially worthy of notice in these towers is their unlikeness in these particulars to such structures as the Magdalen Tower, Oxford, and to some of those of the Norfolk and Suffolk type, in which the lower stages of the tower are comparatively quiet and unpierced, and the belfry windows and panelled embattled parapets assume a rich character. Among these we particularly note the elegantly-finished upper stage to the ancient massive tower of Stow-on-the-Wold, Gloucestershire, with its pierced embattled parapet, quite plain below—a class of towers numerous in that and other counties. But there are distinct differences to be noticed when we compare the Somersetshire with the East Anglian towers, the latter having also a reputation for massive quiet dignity in the structural lines and for rich Perpendicular detail. Compare, for example, Cromer, Worstead, and South Repps church towers with those of Wrington and Evercreech. There is an observable difference in the belfry treatment of the former: the windows are comparatively small, and do not fill the width of tower at this stage; in both at Repps and Cromer there are square openings in the intermediate or ringing story filled with tracery and labelled, while the lower story has a large Perpendicular window just above the western entrance and in connection with it. As our readers are aware, the masonry is largely composed of flint, and the panelling of the buttresses with "flush work" is a feature. Then the treatment of buttresses, parapets, and pinnacles is very unlike that seen in the Somersetshire examples. The upper stage of the angle buttresses are simply weathered, and have not the amount of the stonemason's cunning lavished upon them; the pinnacles rise generally from the angles, and do not spring out of the buttresses, and the parapets are less in height and less perforated. But the chief variation is in the arrangement and proportion of the windows. The upper stories of these towers are lower, and the windows smaller. At Cockfield the deep angle buttresses give a pyramidal outline to the structure, and impart dignity to it. The middle stage on the west front is severely plain, and the structure is crowned by a solid battlemented parapet. More elaborate is the Perpendicular tower of Lavenham, a noble example of deep buttresses and well-marked parapet, but still very unlike the West Country types.

It may be of interest to notice a few of the characteristic peculiarities of the North Somersetshire towers. They are generally western, joined to the nave by a lofty archway vaulted internally. Professor Freeman distinguishes three types: (1), "The Taunton type with a staircase turret at one corner and double buttresses at the others, all the pinnacles being of equal height, the tower being divided into stages by horizontal string-courses. Examples: St. Mary Magdalene and St. James, Taunton, The Abbots, Bishop's Lydiard and Huish. (2), The Bristol type, with a prominent turret, crowned with a single spirelet rising above the rest: St. Stephen's and St. Werburgh's, Bristol; Yeovil, Banwell, Cheddar. (3), The Wrington type, which dispenses with the staircase turret and horizontal divisions, and is panelled with two enormously lofty belfry windows, with pinnacled turrets of the same height: St. Cuthbert's, Wells; St. John's, Glastonbury; and North Petherton. Spires are very unfrequent, and are often imperfect, as at St. Mary Redcliffe [till completed within the past twenty years], Yatton, Shepton Mallet, Minchinhampton. Perfect spires exist at Congresbury, Bridgwater, Frome, Croscombe, Castle Cary, Trent."

We do not concern ourselves with the spire-crowned tower, but deal with the second and third of Mr. Freeman's types in our present remarks. Our sketch of the upper part of the tower at Cheddar represents the characteristics of a large number of

owers in this part of the country, notably hose at Winscombe (a very similar design ncluding the spirelet and turret, the three anels or windows, and the arrangement of uttresses and pinnacles), Locking, and Iutton and Axbridge. Narrow angle uttresses, four stages, the three upper ones aving the windows of the same design. In he front at Cheddar is a large window above oor; canopied niches and figures are placed n each side of the window on the second tage. The two upper stages are shown in ketch, the centre one of the belfry being ierced. The tower is placed in continuation f the nave at west end; there are two aisles, transept on south side, with entrance, and north porch of unique design. The church as flat roofs and pierced parapets. The eneral view of the tower, with the back-round of the Mendip hills as seen from the ilway station, is very pleasing. We draw otice more particularly to the manner the ngle buttresses are formed. In the third age, above the set-off, the buttress is agonally placed, and forms a couple of ngaged pinnacles, terminating below a plain ngular buttress splay (see plans A and B). uch of the elegance and beauty of the lfry story is due to the triple-window rangement, divided by engaged buttressets pinnacles, an arrangement unique of its nd which one seldom sees in other towers this class. At Winscombe and Shepton allet the same design is met with, ading one to surmise that one archi-ct was engaged on all three towers. The erced parapet, composed of equilateral angles intersecting and quatrefoiled, is a ry general one.

Our sketch of the belfry stage of Wrington ves a fair idea of the proportions as seen thin a moderate distance of this fine ucture, though a strictly geometrical view uld make the windows a trifle higher. e plan of church is of the usual kind, but s a very short nave, with aisles and a ith porch instead of transept. It contains rich Late oak-carved screen across the ancel arch, inclosing also the last bays of les. Many points are worth noticing in s magnificent tower: the lofty panels ided into three stages by transoms, the per only pierced; the admirable buttress sign, the gradation of the sets-off, the quisite arrangement of the angle turrets, h their corner pinnacles; the lower story, h its entrance and window united. To hten and relieve the mass of masonry at h angle of tower, the designer has cleverly ught his buttress within the outer gle of the walls of the tower; its width is s than the wall thickness. On the belfry ge the set-off in the tower is utilised to form angle pier for the pinnacle, while the per part shown on plan D is still further eved by the engaged pinnacles which ject from the face of each side of the pier. architect knew the value of a line of dow at the junction of pinnacle and angle, instead of cutting his square pinnacle in f diagonally, and placing the largest face t to the pier, he allowed it a three-quarter jection as shown at C, thus throwing out a strong shadow the pinnacle, and dis-aging its summit. A graceful outline is the result of this plan. The corner ret above is a square, with slightly pro-ing pinnacles at each angle, the external th of one face being equal to the width ier. Internally the tower is opened to nave by a lofty arch, and groined under-th.

We have given these two types as e of leading interest. That of Wrington which class also belongs the noble r of St. Cuthbert, Wells—is not only particular interest to the student tower architecture as being a bold rture from ordinary types, and a fine aple of stone masonry, but displays a ul economy in material, by the use of blank traceried panels in the upper portion, thus reducing the thickness of the walls without lessening their strength or rigidity.

THE HYDROPATHIC ESTABLISHMENT AND ITS BATHS.—X.

By R. Owen Allsop, Architect.

(Author of "The Turkish Bath: its Design and Construction.")

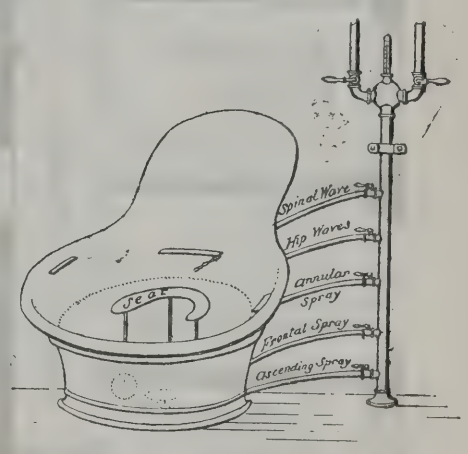
LOCAL baths, such as the sitz, spinal, head, and foot baths, need not detain us long. In themselves they are of paramount importance; but they are obviously simple matters. A foot-bath would be administered in the patient's dressing-room; and *spinal* and *head* baths are ordinarily provided in connection with the various before-described douche-room appliances; but in the classification that governs our consideration of hydropathic baths some simple form of head-washing and application of water bandages is possibly to be understood. The ordinary *sitz bath* is constructed in various forms. In a selection the comfort of the bather should, after effectiveness, be the chief consideration.

There is a broad distinction between sitz baths, in that one class is known as the *running sitz*. The ordinary cold sitz bath is filled with the requisite amount of water, and no change in volume or temperature—excepting, of course, by virtue of the heat abstracted from the bather—is made during the time of the bath. The running sitz, however, is provided with supply and waste, so that the original temperature of the water may be maintained, or the bath be warmed or cooled gradually as the bathman may require. Such baths must of necessity be fixed, and have waste and overflow at the proper height, with a regulating valve for the supply. Sitz-baths of this nature are usually fitted in convenient corners of the private dressing-rooms, as in the plan of the Dunblane baths illustrated p. 3, *ante*.

The *sitz-douche bath* is a most valuable appliance, worthy of the attention of the hydropathist. One form of this bath is shown in the accompanying illustration. It is of a type employed in Germany. As shown, it consists of a bath of the ordinary sitz kind, but fitted with the necessary pipes for the various tonic sprays, &c. A regulating valve, with thermometer to indicate the temperature of the water, connects with a series of pipes, each having a stop-cock. The first pipe supplies the spinal, or back wave, and the second the hip or side waves. The wave-like form assumed by the water is caused by its impinging against metal spreaders. The third pipe supplies the annular spray—a ring of holes emitting jets of water much as one of the ribs of a needle-bath. The fourth pipe supplies a spray directed towards the front of the bather, and the fifth supplies an ascending spray. In the ordinary sitz-bath the bather sits right down in the water, but in the sitz-douche, as illustrated, a seat of a horse-shoe shape is provided, and supported on three metal standards. The area of the seat is reduced to the least possible amount consistent with its purpose, so as to admit the water to play freely around the lower portions of the bather's body. This bath must have a capacious waste pipe. It should be placed in a douche room, or special chamber adjoining a douche room.

MASSAGE.

Turning to class (*f*) of the list hereinbefore given (May 30, p. 753), we find that massage may be included under the division of hydropathic remedies. Of late years the system of treatment called "massage," and consisting of *medical rubbing*, kneading, and otherwise manipulating the muscles of the trunk and limbs, has been greatly in favour, more especially in cases of rheumatism, and ailments of a like nature. In some respects what is called "massage," and the process of shampooing, as in the Turkish bath, are identical; in others they differ. Broadly speaking, the shampooer has to do with the *skin*—the *masseur* with the muscular and nervous systems. Massage may be *dry* or *wet*. The former is well termed "medical rubbing," and is properly administered only by persons who are sound and healthy and of high vitality, and able and willing to handle their patients in a sympathetic and intelligent manner. Dry massage, as its name implies, does not require the medium of water. In wet massage the part operated upon is kept wet, in one way or another. Plain wet massage is, to all practical intents and purposes, the shampooing of the Turkish bath intelligently performed. Different methods of applying the water to the patient may be employed, and the bench, seat, tray, or shallow bath upon which he is placed may be variously designed; but whatever the means and devices employed, the treatment and its ultimate effect is substantially the same, and as effective—probably more so—with simple resources as with complicated contrivances;



A Sitz-Douche Bath.

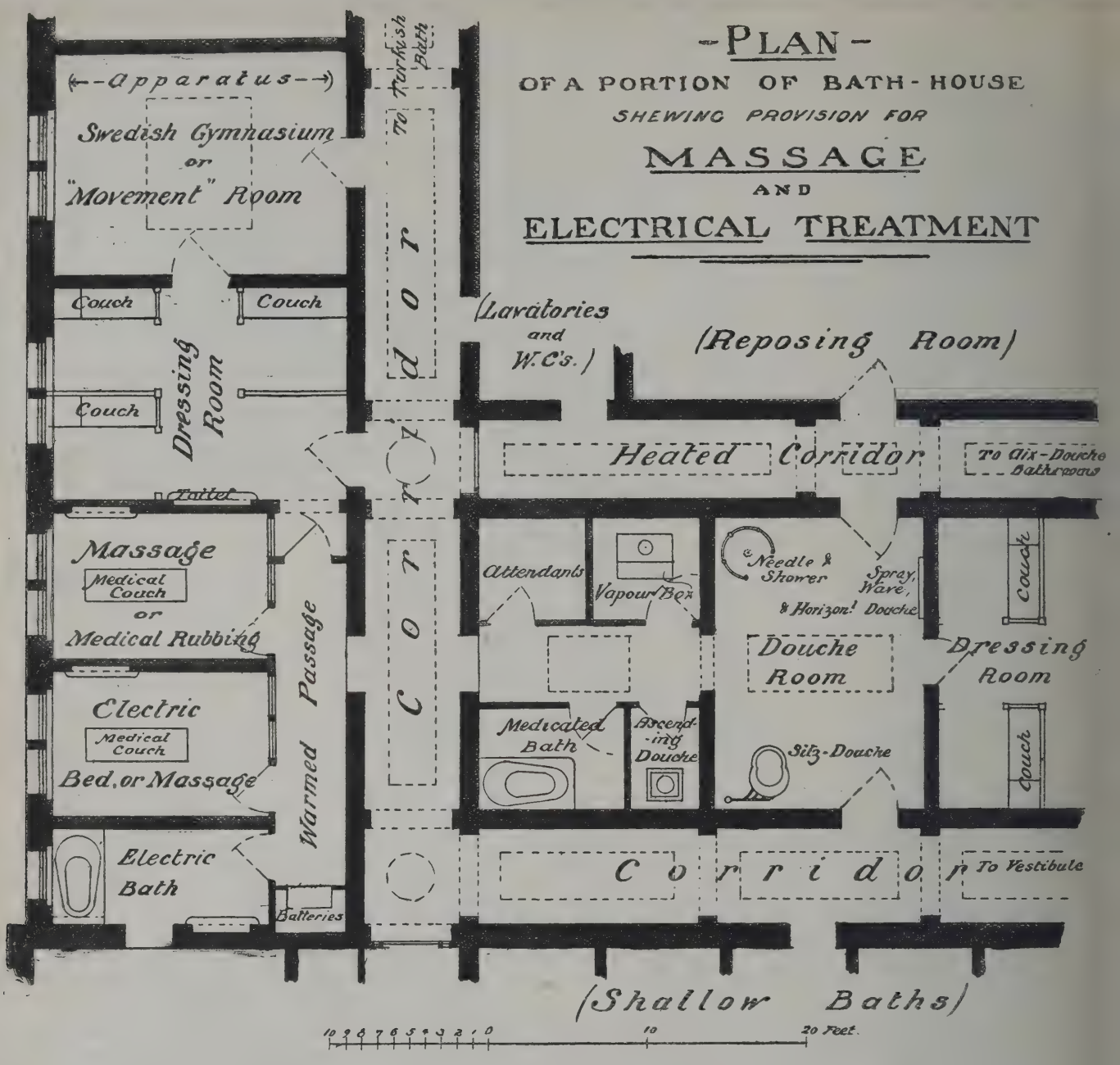
for massage, of whatever kind, consists primarily of the kneading and rubbing, &c., of the muscles of the trunk and limbs, with a view to restoring tone and vigour to the muscular and nervous systems.

When, however, the water employed in massage is directed with force and at high pressure upon the patient, the system of treatment becomes that known as the

AIX-LES-BAINS MASSAGE,

popularly styled the "Aix-douche." This method of massage with douching has been in increasing favour latterly in this country, and has been adopted at hydropathic establishments.* In all cases the treatment is modelled on that in vogue at the famous bathing establishment at Aix-les-Bains. As there arranged, the provision for the baths consists of bath-rooms having, for the sake of convenience and expedition in working, *two* dressing-rooms attached. In the bath-rooms are the appliances for the treatment, which consists of the massage of parts of the body upon which is directed, with more or less force, a stream of thermal sulphur-water. At Aix *two* bathmen are employed in giving the treatment to each patient, but by placing the hose-pipe supplying the douche over his shoulder, one attendant may manage by himself, though, of course, far less effectively. At Aix there is in each bath-room a back-wave on one side of the room; on another are various douches for the massage, having convenient lengths of hose; and on a third there are showers, &c., with which to conclude the process. The patient reclines on

* Very complete arrangements for the Aix-douche have recently been made in the bath-house at Dr. Rayner's Hydropathic Establishment at Malvern.



an easy wooden chair, or support of the *dureta* type.

There is necessarily much splashing in an Aix-douche bath-room; the waters must therefore be drawn off rapidly, and the floor must be sunk below the level of the adjoining bath-rooms, or be formed of perforated tiles, having a space beneath connected with the drain.

ELECTRIC BATHS, ETC.

Electricity may be applied to the body, for therapeutic purposes, in several different ways—either in a bath of warm water, or on a bed or couch, &c., and either from dynamos or batteries. A bath for electrical purposes is best formed of enamelled earthenware; the bather is immersed in water of a considerable temperature, and has copper plates, &c., so arranged as to pass a current through his body. An electrical bed consists of an ordinary medical bed, upon which the patient reclines, having one plate at the feet and the other on his chest or back.

Electricity has undoubtedly a powerful effect on the human organism, though little is really known as to its mode of action. This obscurity and uncertainty has unfortunately prepared a way for much harmless imposture and quackery in electrical treatment. Various methods of applying electricity have been tried, and various complicated treatments essayed. Nothing over and above the benefits of the simple, straightforward application of the electrical current to the body, has, however, so far as I am aware, been attained. Moreover, some of the methods of applying the electrical current are fraught with danger to weakly persons. In the electricity-in-water bath, the patient is immersed for some little time in water at a high temperature—a treatment eminently provocative of cardiac disturbances, besides having other objectionable effects. And as a matter of fact there would appear to be nothing more remarkable to distinguish the electric bath from the electric bed, other than the fact that on the one hand the semi-clad patient is kept comfortably warm through the medium of heated water, and in the other by heated air. A prolonged hot-water full bath is dangerous to some constitutions and debilitating to all; it oppresses the lungs and heart and prevents ventilation of the skin, by stopping perspiration. It would appear, therefore, that the best method of applying electricity to the human body for curative purposes is on the dry system — the electric "bed." The patient should be placed in a warm room on a dry couch, bed, or easy chair, &c. One of the most pleasant and, doubtless, most effective, methods of receiving the electric treatment is in the hot rooms of the Turkish bath, where specially constructed canvas-seated, easy-chairs, with copper plates and connections with batteries, are employed.

In making provision for the treatments above described—the Aix-douche, massage, and electricity—in the hydropathic establishment, it should be the aim of the designer to concentrate and render as compact as possible, so that there may be no space wasted, no needless building, and no unnecessary labour on the part of bathmen and attendants. Ordinary dry massage can be practised at the couch of the bather in the dressing-rooms of the bath-house, if these apartments are commodious and spacious, and comfortably warmed by means of hot-water pipes, or other heating arrangements. The patient will recline on an ordinary medical couch. In large, public, medical baths, a special room for dry massage will be provided. This room should be maintained at a temperature comfortable to the half-clad patient and masseur. It should, for the sake of both, be thoroughly well ventilated; and the lighting should be good, preferably from the top. For the sake of economy, this room might also be used for the "electrical bed." The same couch would serve both purposes.

Simple wet massage, in the hydropathic establishment, may be economically performed in the shampooing-room of the

Turkish bath. In a special room, for this treatment, there should be water-fittings, comprising hot and cold supply, basin, hand-bowl, and a rose or spray.*

Where, in medical bathing establishments, the Aix-douche is provided, no other form of wet massage will be necessary, massage being comprised in the Aix treatment. The Aix-douche necessitates, in any establishment, a special bath-room. It must be fitted with the appliances before described. For the sake of economy, in the hydropathic establishment, the ordinary dressing-rooms will be employed. In public bath-houses, two dressing-rooms should be conveniently connected with the Aix-douche bath-room, so that whilst one bather is receiving the treatment, another may be dressing or undressing as the case may be. These dual dressing-rooms should be always provided to bath-rooms of public bath-houses where the baths or treatment are of a special nature. A great economy is thereby effected.

Electric baths may be effectively provided in an ordinary bath-room fitted with a marble or glazed earthenware bath. The batteries can be placed on shelves in an adjoining chamber or closet. By similar simple means dry electric beds may be given in the couches in the dressing-rooms. In large establishments and public baths, a special bath-room for electric baths, and a special room for electricity without the medium of water should be provided.

In connection with a suite of massage rooms in a very complete public bath-house would be a room for the administration of the Zander system of mechanical calisthenics, commonly called the "movement cure," and consisting of a series of mechanical bodily exercises and mechanical manipulations for correcting tendencies to deformity and generally developing the physique. This room should be large, lofty, lantern-lighted, and perfectly ventilated, special attention being directed to the supply of an abundance of pure fresh air, regard being had to the increased respiration of the patient when under some of the peculiar methods of treatment. The simple "movement-cure" room, when provided, will only require a few of the more ordinary calisthenic machines. The complete fitting-up of a room or gymnasium with the machines made by Zander, of Stockholm, is a most expensive affair, and requires power-shafting for driving many of the appliances.† The plan given on preceding page shows a portion of a medical bath-house, and generally illustrates the remarks made on massage and electricity. It also shows a general douche-room, and the corridors connecting it with the miscellaneous bath-rooms, as before advocated. The baths are those of the gentlemen's department. The bath-rooms are 15ft. high, and the corridors 10ft., so that clerestory windows are available for lighting and ventilating the douche-room and chambers adjoining. The heated corridor forms part of a system allowing perfect intercommunication between the various baths without the necessity of the bathers' passing along chilly passages in a semi-nude condition.

* One of the most elaborate massage-baths ever arranged was erected some little time ago by Mr. John Heaton, of London, at the Malvern House Hydropathic Establishment, at Buxton. By an ingenious arrangement of pedals, &c., the masseur can throw jets of water over the patient, and this without for a moment neglecting the process of massage.

† In providing the Zander system of treatment, it will be necessary for the architect to inspect establishments fitted up for this special purpose. The most complete in this country is to be found at the Zander Institute in Portland-street, London, where a spacious room has been fitted up with every conceivable machine, at an outlay of no less than £11,000.

A TERRACOTTA REREDOS.

We have lately seen, at Messrs. Doulton and Co.'s works, Lambeth, a very finely-executed reredos in terracotta intended for St. John's Church, Notting Hill-gate, designed by Mr. Aston Webb, F.R.I.B.A. The design is in three main compartments, the centre one being the highest and having the "Crucifixion," and in the side panels are figures representing incidents in the life of St. John. These sculptural portions are the work of Miss Emmeline Halse, who, we believe, has presented her labour to the church. It is rather as a design in a material which Messrs. Doulton have made a speciality of their various manufactures that we here speak of it. The centre and side compartments are divided by very elegantly designed and modelled mullions, moulded and enriched, the upper portions are canopied by elaborate cusped arches and tracery of Perpendicular character crowned by an ornamental and very effective cornice. This work is composed of Messrs. Doulton's "cellular terracotta," which resembles in all essential qualities highly wrought stone, requiring no filling-in with concrete. The whole of the reredos has been constructed without moulds; the lines and mouldings are admirably true, and the jointings and blocks are without any of those painful irregularities or warpings which spoil so much ordinary terracotta work. We recommend architects to pay a visit to the works, and inspect the reredos, which will remain on view until the end of this month.

We may here take the opportunity of saying that Messrs. Doulton and Co.'s newly-patented method of making terracotta will be the beginning of a new era in its manipulation. The great objections to the ordinary process of manufacture, that of spending all the skilled labour on models and moulds, which formed no part of the executed blocks, nor guaranteed their being exact reproductions, and filling in the hollows with concrete, which often fractured the blocks, have been avoided by the new method. The cellular terracotta is made in perforated blocks, so that they are weight-sustaining—an important condition for building—instead of being hollow box-like blocks to be filled in with concrete, which often bursts on setting. Each block of clay is subjected to considerable pressure, is practically solid like stone, and can be worked upon directly, after the manner of masons' work, with templates and squares, while in a plastic state. We saw the initial block of moist clay being transformed into elaborate moulded and curvilinear work by mechanical and other means, which combine the skill of the modeller, mason, and potter; some finished by the lathe into perfectly-formed shafts for columns requiring no after-chiselling or "doctoring"; mullions, tracery, plain and intersected, cornices, arch mouldings, and other architectural details having the finest arrises and sharpness. These results are strikingly different from the old process, where moulds are used for the reproduction of models previously made in plaster. As no casting processes are employed, none of the restrictions they impose are required, the whole being, as it is called by Messrs. Doulton, "direct" work. The manipulative processes which each block undergoes enable the finished work to possess all the finer detail and delicacy which hitherto have been only obtainable with stone. Terracotta will now equal it in these qualities, and even the granular texture and colour of stone can be given to the clay product. The use of the cellular terracotta in its weight-sustaining capacity is an important point, which we purpose treating of in a future notice, with illustrations.

Our attention was also directed to a new sgraffito ornament in some figure-frieze panels on the new buildings of the firm—a kind of surface decoration that can be done inexpensively, and is very bold and effective in such situations.

NOTES ON BUILDING PRICES.—VII.

By John Leaning.

We continue our list of exceptions for Metropolitan vestry charges:—

St. Pancras.—As last.

	s.	d.
Flap trap and two lengths of pipe, 6in.	16	0
" " " 9in.	19	0
" " " 12in.	26	0

Kensington.—

Schedule of Prices.

EXCAVATORS, &c.

Digging, including every expense of taking up, stacking, and relaying surface pavements, strutting, fencing, shoring, and lighting, slinging pipes, supporting cellars, vaults, ovens, &c., and making same good if damaged through the execution of work. Providing all watching, hoarding, pumping sumpts, &c.

Filling in with layers of earth not more than 6in. in thickness, and well ramming same with punners of a proper weight, providing and using sufficient water for the proper consolidation of the earth; removing and carting away all superfluous earth, rubbish, soil, &c., and providing shoot for same, leaving road and footpaths free and clear as before commencement of works, and being held responsible for trenches and works for three months after completion of same. At per cubic yard—

	s.	d.
Not exceeding average depth of 6ft.....	2	0
" " " 10ft.....	2	3
" " " 15ft.....	2	6
" " " 20ft.....	2	9
" " " 25ft.....	3	0
" " " 30ft.....	3	3
" " " 35ft.....	3	6
" " " 40ft.....	3	9
" " " 45ft.....	4	0
" " " 50ft.....	4	6

TUNNELLING.

Driving headings, including all contingencies as above and hereinbefore set forth; raising excavated earth to the surface and carting away surplus (the shafts between headings to be measured and valued at foregoing prices). At per cubic yard—

	s.	d.
Not exceeding average depth of 20ft.....	4	0
" " " 30ft.....	7	0
" " " 40ft.....	8	6
" " " 50ft.....	10	6
Filling in earth to headings and well punning same. At per cubic yard....	2	6

CONCRETE.

To provide concrete, including all staging, planking, wheeling, and throwing same into any position required:

	s.	d.
Lime concrete composed of Thames ballast and Dorking lime mixed 6 to 1, at per cubic yard	8	0
Concrete composed of Thames ballast and lias lime filled in over, under, and around brickwork, at per cubic yard	8	
Portland cement concrete, mixed 6 to 1, at per cubic yard	12	0

BRICKLAYER.

The bricks to be No. 2 Burham's, according to sample to be seen at the surveyor's office, Kensington Town Hall. The mortar to be well mixed in the proportion of one measure of lime to two measures of sand.

The cement and sand to be mixed one and one, and not to be re-mixed when once set.

The brickwork in sewers to be measured as ordinary walls, and all openings in same to be deducted in full.

SEWERS, AND WORK CONNECTED THEREWITH.

Building or re-constructing brick sewers, including all labour, material, plant, tools, and every expense. The brickwork to be executed in neat, regular, and uniform courses, the joints to be well flushed in, and grouted solid, and neatly struck flush with the interior face of the work.

The price to include all cuttings, angles, and splays.

	£	s.	d.
Brickwork in mortar, at per rod reduced	17	0	0
Ditto in Portland cement, at per rod reduced	20	0	0
To build walls in mortar to a height not exceeding 10ft. above ground level, at per rod reduced.....	14	0	0
Ditto ditto above 10ft., at per rod reduced	15	0	0
Brick on edge in Portland cement, at per foot run	0	0	8
Rendering inside of sewers, sandpits, &c., with Portland cement ½in. in thickness, at per yard super	0	2	6

Cutting through brickwork and providing and fixing block, flap-traps, and two lengths of pipe, and make good same, and side wall of sewers, in brickwork and Portland cement:—

	£	s.	d.
6in. trap and 4ft. of 6in. pipe, each.....	0	10	0
9in. trap and 4ft. of 9in. pipe, each.....	0	15	0
12in. trap and 4ft. of 12in. pipe, each....	1	0	0
Bricklayer, per hour.....	0	0	9
Labourer, per hour	0	0	6
Excavator, with long boots, if necessary..	0	0	7
Watchman	0	0	5

PIPE DRAINS AND SEWERS INCLUDING EVERY EXPENSE.

To open the ground to the necessary widths and depths, and in conformity with the conditions herein before stated, provide and lay down pipes, fill in trench, and cart away surplus earth.

The pipes to be perfect in form and of a uniform

thickness, the sockets to be entire, the joints made good all round with Portland cement; the pipes to be properly bedded, if necessary, on concrete (extra) with a continuous bearing, the sockets being sunk, the inside to be cleaned out with a half-disc, block ends of pipes to be tightly fitted with ½in. wood discs.

Timber to be left in if directed and paid for extra.

	Not exceeding an average depth of	s.	d.
6in. pipes at per foot run	6ft.	2	0
,, ,,	9ft.	2	6
,, ,,	12ft.	3	0
,, ,,	14ft.	3	6
,, ,,	16ft.	4	0
,, ,,	18ft.	4	6
,, ,,	20ft.	5	9
,, ,,	25ft.	7	0
,, ,,	30ft.	9	6
9in. pipes ,,	6ft.	2	3
,, ,,	9ft.	2	9
,, ,,	12ft.	3	3
,, ,,	15ft.	4	0
,, ,,	20ft.	6	0
,, ,,	25ft.	7	9
,, ,,	30ft.	10	0
12in. pipes at per foot run	6ft.	2	9
,, ,,	9ft.	3	6
,, ,,	12ft.	4	3
,, ,,	15ft.	5	0
,, ,,	20ft.	6	6
15in. pipes at per foot run	6ft.	3	6
,, ,,	9ft.	4	3
,, ,,	12ft.	5	0
,, ,,	15ft.	5	3
,, ,,	20ft.	6	6

Providing, laying-down, and jointing straight pipes of the following diameters, exclusive of digging, &c.:—

	s.	d.
4in. pipe at per foot run	0	6
6in. ,, ,,	0	8
9in. ,, ,,	1	2
12in. ,, ,,	2	0
15in. ,, ,,	3	0
18in. ,, ,,	4	6

Curved and tapering pipes to be charged one-half extra on above prices.

	£	s.	d.
Extra only for single junctions left in straight run of pipe:— 6in., each	0	0	9
,, ,, 9in. ,,	0	1	6
,, ,, 12in. ,,	0	2	6

The size of the main pipe determines the price, the inlet of junctions to be of any diameter.

	£	s.	d.
Double junctions, extra on single junctions			
,, ,, 6in. extra each	0	0	4
,, ,, 9in. ,,	0	0	8
,, ,, 12in. ,,	0	1	3
Siphon traps fixed complete, 4in., each	0	4	0
,, ,, 6in. ,,	0	5	6
,, ,, 9in. ,,	0	7	0
,, ,, 12in. ,,	0	9	6
Stoneware water-closet pans and siphon trap, either detached or in one piece, fixed complete, each	0	13	0
Bricks, delivered at works, Stocks, per 1,000	2	0	0
Bricks, delivered at works, No. 2 Burham's, as per sample, per 1,000	2	15	0
Blue bricks, as per sample, per 1,000	3	0	0
Blue lias lime, per bushel	0	1	0
,, ground ,,	0	1	3
Dorking lime ,,	0	0	10
Cement, Portland ,,	0	2	0
Sand, per yard	0	4	0
Mortar, per hod	0	0	7

MASON.

Providing, laying, and fixing Yorkshire paving and landings, tooled and ℔ squared, 2in. thick, per foot super.	0	0	10
Do., do. 2½in. ,, ,,	0	0	11
Do., do. 3in. ,, ,,	0	1	9
Do., do. 4in. ,, ,,	0	1	4

TIMBER.

4ft. by 4ft. struts, best fir, per cube foot	0	1	9
5ft. by 5ft. ,, ,, ,,	0	1	9
6ft. by 6ft. ,, ,, ,,	0	1	9
8ft. by 8ft. ,, ,, ,,	0	1	9
Sound deals, 9 by 3, per foot run	0	0	5
Elm poling boards, 1in. thick, per ft. super.	0	0	4

Timber left in trenches by direction of surveyor, the full value will be paid for; but no allowance made for shaping, waste, or fixing, or displacement and removal of earth or other material.

IRON-WORK.

	£	s.	d.
Side entrance covers, with safety grating, lock and key, as per sample, delivered on any job, each	5	0	0
Extra only fixing, each	0	5	0
Gulley grates, 18in. × 18in. × 6in., hinged as per sample delivered, each	1	5	0
Extra for fixing each	0	2	0
Ventilating gratings, according to pattern delivered, each	0	15	0
Extra for fixing each	0	1	6
Flushing box, fixed, each	0	12	6
Supply and fix manhole covers, or any other description of cast-iron plates, at per cwt.	0	10	0
Foot-irons, 1½in. wide, by 3in. thick, of flat wrought-iron, fixed in side entrances, per lb.	0	0	6

Note.—All work to be measured as it is left, without any allowance for extras, use, and waste, or any other charge whatsoever.

The foregoing schedule, besides the information it gives of actual prices, is a simple, but very useful, form for adoption in such cases:—

THE CITY OF LONDON.

The Commissioners of Sewers issue printed regulations, to be obtained on application at their offices, as follows:—Regulations and fees for hoards and scaffolds, open and closed areas, cellar-flaps, vaults, and coal plates. The Commissioners take up and reinstate paving, make connection with sewer, and lay drains from sewer to front wall of vault or building.

FEES FOR LICENSES.

FOR HOARDS.

	£	s.	d.
If to remain not more than two weeks, per foot lineal of frontage	0	0	6
If over two weeks and not more than four weeks, per foot lineal	0	1	6
If over four weeks and not more than eight weeks, per foot lineal	0	4	6
If over eight weeks and not more than twelve weeks, per foot lineal	0	9	0
For every month or part of a month beyond the twelve weeks, per foot lineal	0	5	0

FOR SCAFFOLDS.

If to remain not more than two weeks, per foot lineal of frontage	0	0	4
If more than two weeks and not more than four weeks, per foot lineal	0	1	0
If more than four weeks and not more than eight weeks, per foot lineal	0	3	0
If more than eight weeks and not more than twelve weeks, per foot lineal	0	6	0
If more than twelve weeks and not more than sixteen weeks, per foot lineal	0	10	0
For every month, or part of a month, beyond the sixteen weeks, per foot lineal	0	5	0

FOR RAKING SHORES.

If to remain not more than two weeks, each	0	5	0
If more than two weeks and not more than four weeks, each	0	15	0
If more than four weeks and not more than eight weeks, each	2	0	0
If more than eight weeks and not more twelve weeks, each	4	0	0
For every month, or part of a month, beyond twelve weeks	2	0	0

No fee, either for hoard or scaffold, to be more than £10.

When a license is renewed the fee is to be that which would have been charged had the license been taken out for the full time at first, less the sum of money already paid for the first license.

DISTRICT SURVEYOR.

In London the district surveyor's fees must be allowed for. The incidence of these is best learned from the Metropolitan Building Act. The principal points liable to dispute are, What is a building? What is a separate building? Who is liable for fees? and To what extent? The schedules of the Act state the amount of fees. There is an extra fee of 5s. per house under the Metropolis Management and Building Acts, Amendment Act, and By-laws, which is apt to be forgotten. It is also necessary to observe that when party-walls are cut into, raised, or otherwise added to, the fees for an alteration (half-full fees) will be charged for adjoining buildings. A very useful map, showing the boundaries of the districts of the various surveyors, was published by the *Builder* in 1887. There is also a compilation by Ellis Marsland, district surveyor for East Kensington, of "Rules and Regulations affecting Building Operations in the Metropolitan Area," which only requires to be better known to be appreciated as it deserves. The London estimator who has not already seen it will find it to his interest to obtain it.

(To be continued.)

The Congress of the Union of German Historical and Antiquarian Societies is to be open at Schwerin in September, and will last four days.

SANITARY CONGRESS AT BRIGHTON.

THE twelfth annual congress of the Sanitary Institute is being held throughout the week at the Royal Pavilion, Brighton. The inaugural address was delivered by the President, Sir Thomas Crawford on Monday night, who took as his chief topic the story of laws violated to the prejudice of health, and as surely avenged, even to death, as a penalty. The laws which governed the origin and spread of preventible disease were not merely physical, nor were they merely moral laws. They were both. There was a moral as well as a physical code which must be observed if men were to realise all that might reasonably be hoped for in preventive medicine. United efforts on the part of the learned professions in the cause of public health would do much to create a healthy public opinion on the importance of sanitary legislation, and the due administration of all laws bearing upon the health and physical condition of the people. But more was needed. Lessons in personal and domestic hygiene must find a place in the curriculum of the elementary schools before they could hope for the realisation of all that was practicable in the prevention of sickness and the prolongation of life. He desired to call attention to the wastefulness of ignorance in regard to sanitation in general, and domestic hygiene in particular; and the ample financial returns which all might realise by grappling vigorously with the question of disease prevention. Stated in round numbers, the loss to the army from non-effectiveness through sickness was equal to a force of 10,716 men. Assuming the cost of each soldier to be £1 per week, or £52 a year, a very low estimate, this loss by sickness amounted to £557,232. Sir James Paget, in 1884, estimated that the loss from sickness among the civilians between the age of 15 and 65 in England and Wales amounted to about one-fortieth part of the work done in the year by the whole population between these ages. Rather more than half this loss fell upon the domestic, agricultural, and industrial classes. Valuing these lost services as averaging one pound per individual per week, the loss to the annual wealth of the country from sickness among these classes alone amounted to £11,000,000 sterling. Sir Edwin Chadwick considered Sir James Paget's estimate too low by many millions, and that the burden of taxation, arising from this cause, was three times greater than the poor rate. Obviously the removal and destruction of all decaying organic matter was one important means by which amelioration was to be secured. Starve the microbe and save the man. This important principle was too often neglected in the present system of dealing with house refuse. As Dr. Parkes said, "The best method of getting rid of dust-bin refuse was to burn it." But of all the causes which contributed to the origin and spread of preventible disease, overcrowding was perhaps, the most important. Nothing short of prohibitive legislation would check this. Every human habitation, whatever its height, should have open spaces in front and rear, commensurate with such elevation, so as to secure a free and adequate supply of both air and light to every part of the building, and the number of persons inhabiting such a dwelling, or congregating in a place of public assembly, should also be limited to that for which its aërial capacity was pronounced by competent authority to be adequate. Another indispensable requisite was a full and continuous supply of fresh potable water of good quality. Pure air and water, the direct light of the sun, and absolute cleanliness, with ample space in and around our dwellings, were the best safeguards against the invasions of disease-producing micro-organisms. What evidence had they to show that sanitation had done, or could do, anything commensurate with its cost, to lessen sickness and to lower the death-rate? Thanks to the wiser policy pursued both in India and at home, the death-rate in the Army has been a steadily decreasing quantity. And yet the health of the Army was not as satisfactory as it should be, nor were the barracks in a reasonably satisfactory sanitary condition, but we might hope that the £4,000,000 just voted for barrack construction and improvement would remove all cause of complaint on this score. In civil life, too, we saw satisfactory results following sanitary improvements. In the quarter ending June the death-rate in London was 17·3 per 1,000, of which 2·5 only was from zymotic disease. Ten years ago the death-rate was 19·1 and twenty years ago it was 22·0 per 1,000. The showed steady progress, and was in happy co

trast to similar conditions prior to the completion of the main-drainage scheme. The Sanitary Institute had had difficulties to contend with. Even now its museum was in urgent need of further development to make it a faithful record of progressive advancement in sanitary engineering, to which the public could resort when in need of trustworthy means of solving sanitary doubts regarding their own domestic arrangements.

A DOCTOR ON ENGINEERS' FAILURES.

Section I, that of "Sanitary Science and Preventive Medicine," was opened on Tuesday by an address from Dr. G. Vivian Poore, who selected as his topic the Living Earth. He pointed out that of late years we had obtained the knowledge that the upper stratum of ground was teeming with organic life, a fact of prime importance to sanitarians. In our sanitary arrangements we have not sufficiently distinguished between the living mould of the surface and the dead earth of the subsoil. The living mould is our only efficient scavenger and filter. The panacea for all sanitary ills had been, and still is, drainage, and the sanitary offices should be kept away from the main structure of the house, and not, as was the filthy custom of the present day, be brought almost into the bedrooms. The Thames, the Liffey, the Clyde, the Mersey, and the Irwell are standing testimony to the failure of great engineering schemes, and the last scheme put forward with regard to the sewage of London, to convey it all to the Essex coast and cast it into the sea, is an experiment which, like its predecessors, may be productive of unforeseen results. A nation that fouls its streams and starves its soil is in danger of poisoning and inanition. A nation which imports a great part of its food and a great part of its manure, and systematically, and by Act of Parliament, throws all its organic refuse into the sea, is undoubtedly living on its capital. Our capital just now is undoubtedly considerable, but we are in a fair way to run through it; and when we have done so, who can forecast the future?

Sir Douglas Galton, in proposing a vote of thanks to Dr. Poore, objected to his opinion that the getting rid of refuse was not a question for engineers. He contended, on the contrary, that the present system was most desirable, and he also thought that had Dr. Poore taken the question of living water, as well as the living earth, he would have found that water was as great a purifier as the earth, and that, therefore, the present system was advantageous and important.

SANITARY CONDITION OF BRIGHTON.

Dr. J. Ewart read a paper on the sanitary advance of Brighton. Of the site of Brighton he said it would be difficult to find any locality endowed with so many physical advantages or unimpaired with so few defects. As to the drainage of the town, he emphasised the fact that the sewers were well flushed by filling capacious manholes with water and letting them empty with a rush. There was also a constant house-to-house inspection in operation to preserve household sanitation. Electric-light works had just been commenced by the corporation, a light which he regarded as the only real sanitary light available. Some discussion followed the reading of the paper, and a resolution was carried unanimously recommending to the council of the Institute the consideration of the expediency of introducing and promoting a Bill in Parliament making landlords and owners liable for all sanitary improvements in dwelling-houses.

Professor Corfield, M.D, gave a practical address on "House Sanitation from a Householder's Point of View," pointing out many matters, including defective dustbins and flues, leaky gas-pipes, drains, and overflows, which householders neglected, and which led to the propagation of disease, which could be prevented if they would only learn the elementary principles of house sanitation.

In the evening Mr. W. H. Preece, F.R.S., lectured on

THE SANITARY ASPECTS OF ELECTRIC-LIGHTING.

He argued that, electricity and light being analogous and identical forms of energy, the former was naturally the proper source of artificial illumination; that all other sources of artificial illumination being dependent on the absorption of oxygen, and resulting in the vitiation of the air, are injurious to health; and that the same authority that regulated the sanitation of dwellings and the supply of food should also control the purity of the air men breathed and the light they worked by. Compact areas covered by a radius of half a mile were best served on the low-pressure system. Those supplied beyond a radius of one mile could be served economically only on the high-pressure system. Everywhere the use of the electric light was increasing by leaps and bounds, and not only was it naturally the proper source of light, but economically it must eventually supplant its rivals.

On Wednesday, in Section I., the Hon. F. A. R. Russell read a paper on "A National Health Service," in which he urged that the health officers to all authorities, county and local, ought to be placed under the control of a department of the State, the presidency being undertaken by a Minister of Health.

PROFESSOR ROGER SMITH ON BATHS.

The address to Section II., "Architecture and Engineering," was given by the President of the Section, Professor T. Roger Smith, F.R.I.B.A., who took as his subject "Baths." Having referred at some length to the baths of the Romans, he passed on to consider the Turkish bath. As a good many attendants were wanted, considerable provision for them was requisite, and the bathers occupied a good deal of space, so that, altogether, a Turkish bath, which many persons attended, requires large and specially-arranged premises, and must, he feared, always remain a somewhat high-priced luxury. The vapour bath, when combined with a needle bath or spray, was capable of being used in any ordinary bathing establishment, and of exciting something of the same sort of action on the skin as the Turkish bath. This appliance it would be possible to introduce into establishments where inexpensive baths were given with advantage. Professor Roger Smith next spoke of the advisability of providing large public swimming-baths, perfectly heated and ventilated, and described the methods of construction and heating the same, and then turned to the other part of an establishment of public baths—the ordinary warm or slipper bath. He described the various forms in which these single baths are constructed. He admitted that while the operation of the Baths and Washhouses Acts had brought a means of bathing within the reach of large numbers of people, it had not gone far enough. They were not frequented to such an extent as to make them self-supporting; and the prices charged, though very moderate even if they reach the maxima of the Act, did not place the bath within the reach of every class of working people; while the mere fact that these establishments must be on a considerable scale, and therefore could not be very close together, removed them from the easy access of some of those who would use them if they could. Could we, Mr. Smith inquired, bring the bath nearer to the doors of the people, and could we give them a cheaper bath than anything accessible at present? In crowded towns and cities simple, cheap, and accessible bathing establishments, formed in crowded neighbourhoods, set up as a rule in existing buildings, and adapted to the wants and the purse of the crowd, would be popular and largely used; and his impression was that they could be made to pay their expenses, and possibly to yield a profit to those who established them. If so, few better openings for practical benevolence seemed to exist than the multiplication of appliances of this sort under prudent and careful direction, and he wished the subject might attract the attention of philanthropists.

BRIGHTON AS A HEALTH RESORT.

Mr. F. J. C. May, the borough surveyor, read a paper on "Brighton as a Health Resort." He described the improvements achieved during the last thirty years. After referring to the buildings, the groynes, and the sea-wall along the parade, he pointed out that the system of groyning adopted by his predecessor, Mr. P. C. Lockwood, since the year 1858, had resulted in the reclamation of 23 acres of land from the sea, which had enabled the Corporation to increase the width of the carriageways and esplanades on the front to their present noble proportions, besides securing the splendid stretch of beach now to be seen. After alluding to the Madeira-road and other improvements on the sea front, Mr. May enumerated the open spaces possessed by the Corporation, and said with regard to Queen's Park situated in the centre of the thickly-populated eastern wing of the town, presented to the town by the Race Stand trustees, that plans had been prepared for its arrangement as a recreation ground and botanical garden, of which the cost was estimated at £4,000. When completed, this, from the undulated and otherwise suitable character of the land, would be the prettiest of all the public recreation grounds of the borough. The Borough Sanatorium and disinfecting station he numbered as one of the most useful institutions in the borough, and pointed to the increase in the mileage of sewers since 1860, from eleven miles to 72¼ miles. He explained the system of drainage, and the intercepting sewer and Portobello outfall. With a view to render baths more attractive and useful, the corporation had decided to try the experiment of a system of cottage baths dotted about in the poorest and more densely-populated districts, thus avoiding long walks to a central large bathing establishment. In conclusion, he said it was not the intention of the corporation to remain satisfied with what had already been done. A public abattoir, a refuse destructor, a grand extension of the sea defences eastwards in the parish of Rottingdean, with suitable drives and promenade, a scheme for the better utilisation of the Tenantry Downs, a yacht station opposite Kemp Town, various street improvements to relieve the congestion of some of the more crowded thoroughfares, and a new town hall were matters already engaging the attention of the corporation.

The papers and discussions in the Architectural Section were continued yesterday (Thursday), when a conference of medical officers of health was held in the Pavilion. To-day (Friday) Section III., "Chemistry, Meteorology, and Geology" will be opened by an address from Mr. W. Topley, F.R.S., and a conference of sanitary inspectors will take place. To-morrow evening the congress, which, thus far, has been a success, will be closed by an address to the working classes by Dr. B. W. Richardson, to be given in the Town Hall.

WATER SUPPLY.

THE advantage of having a reserve of water is evident, provided it can be kept from contamination; but how many houses do we find with cisterns exposed to all kinds of contamination, both animal and vegetable, as well as to the negligence and uncleanly habits of servants and the idle pranks of children? We occasionally find the cistern standing on a projecting portion of the offices near to, or right underneath, the upper windows of a house; these receptacles for the stored drinking-water are often uncovered. The lids have become rotten and blown away or removed, and in this condition the cistern remains year after year uncleaned and unattended to. What wonder is it that we hear of the illness of the inmates, of diarrhœa, typhoid, and other complaints? Often the cistern becomes the receptacle for dead rats and mice, cats, birds, leaves, dirty rags, and all kinds of house refuse; a thick sediment of soot and dirt settles at the bottom, and from this cistern the house receives its supply of drinking water. We cannot understand why by-laws have not made it compulsory to place the cistern under cover in a well-ventilated portion of the roof or upper story. Never was a greater madness perpetrated than when house builders placed their cisterns on the roofs or flats of the office range, and the same rule is still followed. Whole rows of houses are seen with their cisterns outside.

The following are a few rules that ought to be made compulsory on builders:—The cistern should be placed in a well ventilated and lighted cupboard or room; the floor, walls, and ceiling rendered impermeable, and, if possible, the room should be free from all vitiated air. The door should be close-fitting. Many plumbers recommend the floor to be lined with sheet lead, 5lb. to the foot, turned up at sides, with a waste-pipe fitted with a flap valve to exclude air. The cistern should be raised above the floor on iron joists to allow of easy access for repair. The overflow pipe should be large enough to allow escape if not led to a flushing tank. The cistern should be made of cast iron or galvanised iron—the former is preferred by some authorities—in which case the Bower-Barff process of preserving the iron can be employed. If lead is used, 7lb. is recommended.

Cleaning tanks every two or three months should be made imperative, and for this purpose the water companies, for their own reputation, should afford every facility in the fittings of the pipes to the bottom of cistern, instead of, as some of them do, placing obstacles in the way. It is extraordinary that water companies have not given more attention to this most important part of their customers' fittings, by preventing the location of cisterns or tanks in any but properly protected and cleanly places.

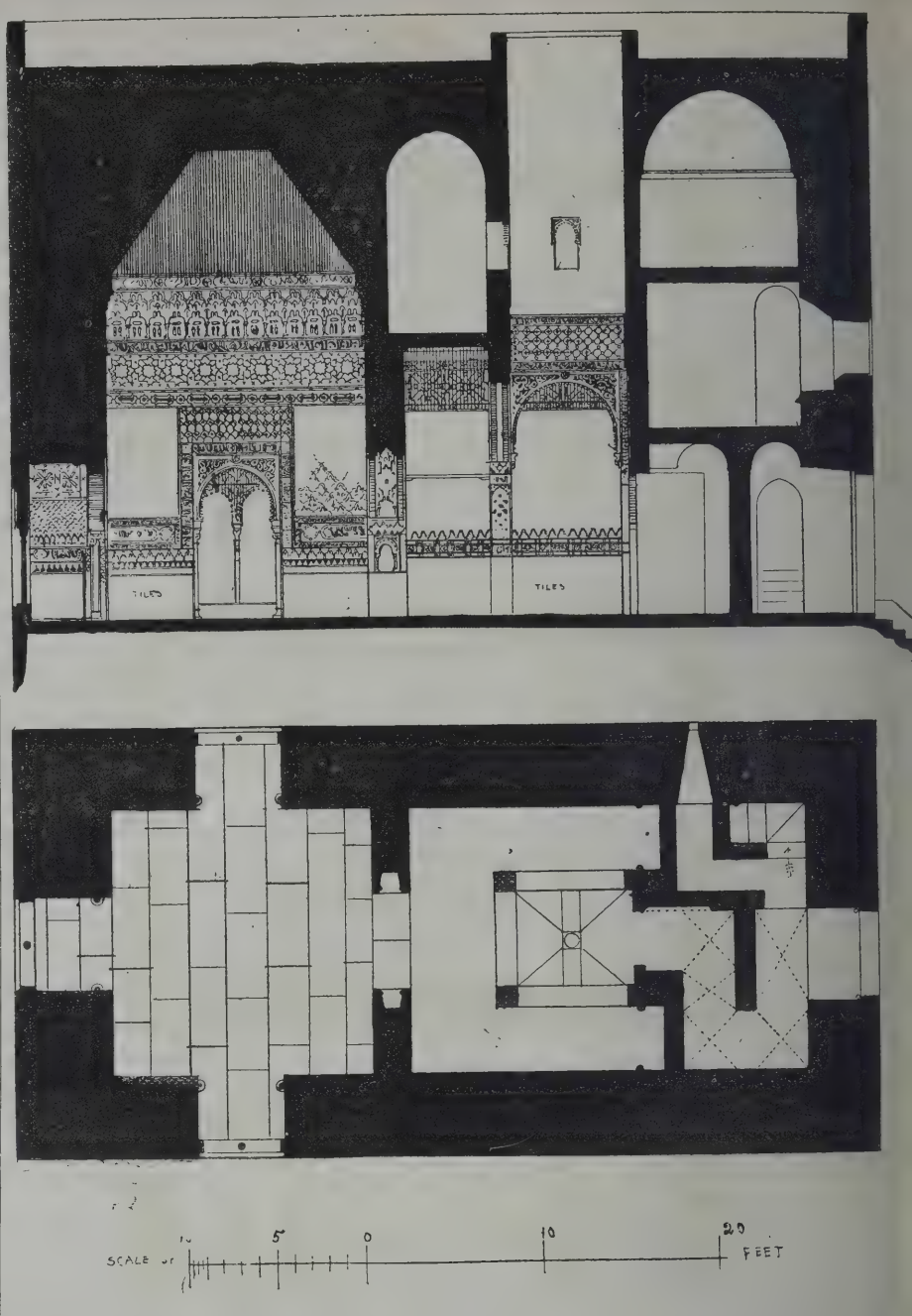
PAVING PRIVATE STREETS.

THE sections of the Public Health Act bearing upon streets and buildings are not so well known as they should be by owners and occupiers of houses. They are Sections 150, 152, 257, 261, 268, 269, and 179. There are a few facts that may be usefully enumerated. That the term "street" is not necessarily a thoroughfare with houses on each side; but simply any road, lane, footway, square, court, or passage, whether a thoroughfare or not, which has been dedicated to the public use by express terms; that the notice be properly drawn up, addressed to the respective owners or occupiers of premises fronting, adjoining, or abutting on the street or road; that the sewer constructed be determined with respect to the street itself, not to the requirements of the neighbourhood; that the levels of the street should be in reference to the street itself, so as to bring it into a suitable condition of uniformity as an isolated street, and not with reference to the levels of other streets. The owners must be given a reasonable time to do the work, and the apportionment of charges should only be made upon the cost of each street separately, and not the cost incurred on a block of streets. Thus it will not be right or fair to add the costs of several streets, and apportion them among the owners of all. The total sum expended may include charge for superintendence. The expenses may be recovered in a summary manner, though sometimes the money is borrowed, and the repayment is spread over a number of years. Under the 179th section of the Act, a disagreement between the authority and owner, about the amount to be borne by the dependent owner, can be referred to arbitration. But the arbitration clause does not allow the question as to the expenses incurred by the authority, being reasonable or otherwise. Generally any aggrieved person can appeal to the Local Government Board.

THE CAPTIVE TOWERS OF THE ALHAMBRA.

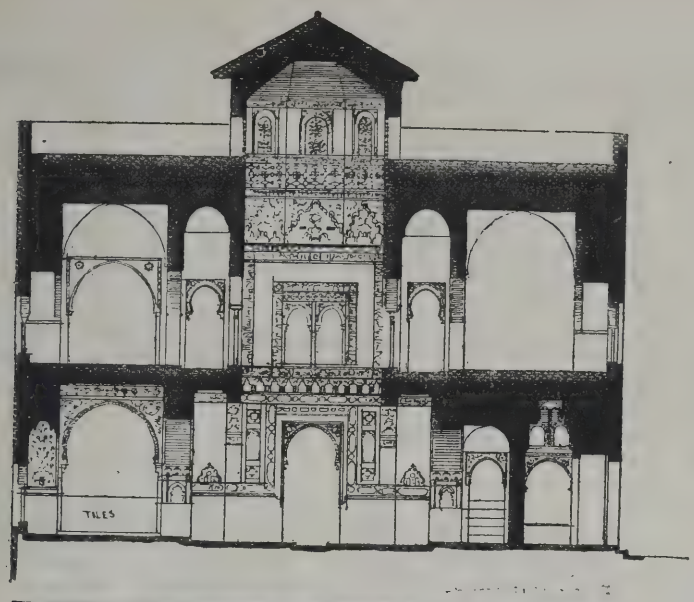
ALTHOUGH the general appearance of the Alhambra is quite familiar to many of us, and its buildings have often been minutely described by travellers and others, still to an architect visiting this romantic old palace there is a great fascination and charm in examining its various parts, and he is certain to be rewarded with many a lesson in plan and design. The two towers, the Torre Infantas and the Torre Cautiva, do not belong to the Alhambra proper, but are situated on the outer wall, about a stone's-throw from each other, and rise high above the tree-tops on the outer side towards a ravine that divides the fortress from the lands of the Generalife. The Torre de las Infantas, the larger of the two, has a very clever plan, and was designed about the year 1300 for the accommodation of three Moorish princesses, daughters of one of the kings of Granada. It is entered some 50ft. above its foundations from the level ground inside the walls. Facing the door is a screen wall, to keep off the draught, and prevent the curious from peering into the inner court. Above the vestibule is a very pretty Moorish vault in red brick, with interlacing arches; on either side are recesses with seats, where the attendants sat. A door to the left leads into the guard-room, and opposite is a neat little staircase with vaulted roof, leading to the sleeping-rooms above.

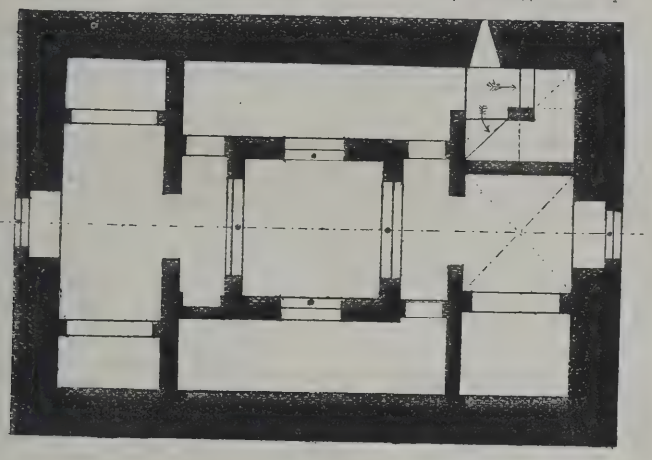
The interior of the tower is divided off into small, fairy apartments, beautifully ornamented in the light Arabian style, surrounding a lofty hall, the roof of which rises above the summit of the tower. The walls of the hall are adorned with arabesques and fretwork which sparkled with gold and brilliant colour. The wooden ceiling is modern, but after the original design.

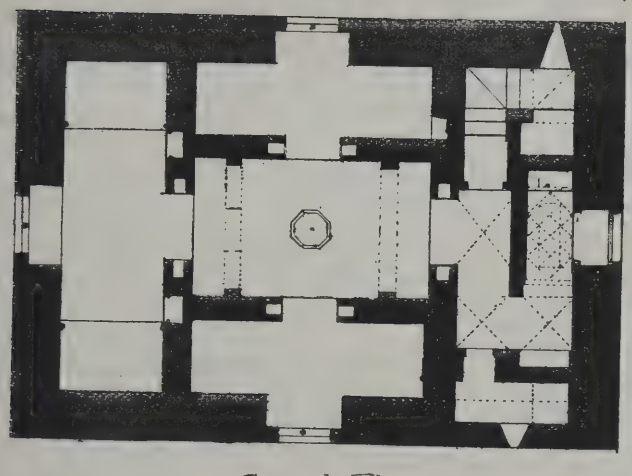


In the centre of the marble pavement is an alabaster fountain that in summer time threw up a jet of water, cooling the whole edifice. Four handsome entrances lead into this inner court, and it may be observed from the plan that each contains two curious little niches, about 3ft. above the floor, probably for holding the shoes of those entering the chambers. The lower part of the walls, to the height of 4ft., is covered with azulejos or porcelain mosaics of various figures and colours. Indeed, every corner of this compact little residence is beautifully arranged and finished. On the first floor the recesses for the beds are separated from the rest of the room by a simple archway. The stair communicates with the flat roof, whence a magnificent panorama presents itself of city and country. Perhaps a few words relating to the princesses who were shut up in this tower by their father, a tyrant king of Granada, may be of interest.

According to Washington Irving, tradition says, as this surly old king was one day riding forth with his courtiers, they met a band of horsemen from the wars with rich spoils and many captives of both sexes, among whom the monarch was struck with the appearance of a beautiful damsel, a Christian. He claimed her as his royal share, and had her conveyed to his harem. With some reluctance she accepted his faith and became his queen, and in process of time the Moorish King was made the happy father of three lovely daughters, all born at a birth. The astrologers predicted that when they came to a marriageable age they would require to be strictly watched. Many years had yet to elapse before the princesses would arrive at that dangerous period, so the monarch had them conveyed to his royal retreat on the Mediterranean. Here they were brought up surrounded by all manner of delights and enjoyments, not being allowed to see anybody but their female slaves. Years rolled on, and the king got warning that the critical period had arrived. What was to be done? He decided to bring them to the Alhambra, where they would be under his own eye. He ordered a tower to be built for their reception and departed to conduct them home in person. But, as fate would have it, on the return journey the princesses got a sight of three Spanish cavaliers of noble birth, who were being brought as prisoners to Granada, and immediately fell in love with them. The king was greatly incensed and had the Christian knights thrown into dungeons and put to hard labour. Finally they were ransomed by their families, but before leaving the Alhambra they formed a plan to carry off the Princesses, whom they had managed to see several times during their imprisonment. So in the dead of night, when the Alhambra was buried in sleep, the three maidens were to descend by a rope ladder from a balcony. The two eldest had alighted safely when the alarm was raised, and the third being timid hesitated and lost her opportunity. The two damsels were hurried to a gate without the walls where the Spanish cavaliers were waiting to receive them. They were placed behind their lovers and the whole party made off across the mountains and reached Cordova in safety. The youngest, whose lover was frantic when he







Ground Plan.



rned she refused to leave, died at an early age, d was buried in a vault beneath the tower cording to rumour.

The Torre de la Cautiva, so called because it s for some time the residence of a fair Christian ncess, who ultimately so bewailed her solitary that she threw herself from one of the ndows and was killed on the rocks below, just the knight who hastened to deliver her came loping down the ravine. The principal mber of this tower possesses some of the best lejos and most delicate ornamentations of the ole Alhambra, and is paved with white rble. Its general proportions are very pleas-, and the whole is surmounted by a noble roof delicately inlaid woodwork forming many star patterns, the colouring of which has long since faded away.

The centre patio is particularly pleasing and quaint and is open to the blue sky above; below the stucco frieze is a plain wall space for the display of rich tapestry; also notice at the entrance a recess in the solid wall to receive the door when open. A tiny staircase leads to the roof and several small apartments overhead.

A. N. Prentice.

At the meeting of the Ystradyfodwg Local Board, on Friday, a letter from the Local Government Board was read sanctioning the proposal of the board to borrow £35,000 for works of sewerage.

THE LATE MR. JULIUS SAX.

We regret to announce the death of Mr. Julius Sax, M.I.C.E., the well-known electrical engineer, at the age of 66 years. Mr. Sax, who died on Thursday in last week at his residence in Great Russell-street, W.C., was born at Sagarre, Russia. He was educated at Konigsburg, and in 1845 was apprenticed to the late Mr. Filby, optical instrument maker at Hamburg. Having served his apprenticeship, he went to Berlin, where he entered the telegraph establishment of Messrs. Siemens and Halske. He came to London in 1851, and worked with Mr. L. Oertling for four years, after which he started in business on his own account for the manufacture of chemical balances and other instruments. Mr. Sax was employed by the late Professor Graham, at that time Master of the Royal Mint, to construct automaton and other balances for use in the Mint. At the Great International Exhibition of 1862 he exhibited bullion and chemical balances, and obtained a prize medal for excellence of workmanship and accuracy. These balances were, by recommendation of Professor Graham, purchased by the Government for the Mint of Hong Kong. In 1863 Mr. Sax turned his attention to domestic telegraphy, &c., and in 1864 took out patents for a metallic fire-alarm button, which would act as an ordinary call as well as a fire alarm; also for indicators to be used with same and for other purposes. Mr. Sax invented and patented in 1869 a form of magneto A B C telegraph; in 1870 an improved mechanical recorder; in 1872 an electric billiard marker; in 1881 an electro-magnetic telephone; an electric water gauge; an electric tell-tale clock for watchmen, with a fire indicator combined; an electric vane; automatic system of electric call-bells for fire stations (exclusively adopted by the Metropolitan Board of Works for all the stations of the Metropolitan Fire Brigade in London); a system of cell calls for police-stations, prisons, &c., as prepared for and adopted by the Commissioners of the Metropolitan Police for use at all stations under their control; also an improved apparatus especially adapted for communicating between drivers and passengers in vehicles, &c. (patented); an electric apparatus for checking cash takings (patented); a perfected form of automatic fire alarm (patented). Mr. Sax has also made several improvements from time to time in electric bells and appliances for various purposes, and has been awarded eight prize medals for excellence of manufacture, &c. Death took place on the 21st of August, at his residence, 108, Great Russell-street, Bloomsbury, London. The business of electrical engineer and electric light contractor will be carried on by his sons, at 7, Ridgmount-street, Store-street, W.C.

CHIPS.

The town council of Swansea came to the decision last week to appoint Messrs. J. Buckley Wilson and Glendinning Moxham as architects for the erection of a new market on the site of the existing Oxford-street Market, the cost, including stalls and all necessary fixtures and fittings, not to exceed £20,000. Messrs. Wilson and Moxham's design, it will be remembered, was selected in the recent competition for this market, and was illustrated in our issue of November 8, 1889, by plan, elevation, and interior view.

The great reservoir which is being constructed at Cardiff, for the Cardiff Corporation, is slowly approaching completion. Mr. J. A. B. Williams is the engineer, and Mr. McKie the contractor. About £47,000 worth of work has been done, the amount of the contract being £83,000.

Corner-stones of a new Primitive Methodist chapel and school in Queen's-road, Halifax, were laid on Saturday. The building has been rendered necessary owing to the sale of the existing school-chapel to a firm of boiler-makers. The cost will be £5,000. The chapel, which has been designed by Mr. James Farrar, of Northgate, Halifax, will be of a Gothic character, fitted with pitch pine, and will accommodate about 500 persons.

The new public buildings at Newcastle-under-Lyme, now nearly ready for opening by the Marchioness of Lorne, have just been embellished by the placing of a clock in the tower, the two dials being at the front and eastern sides. The clock, which has cost £200, has been constructed by Mr. F. Skerrett, of that town, as a memorial to the Turner family. The joint architects are Messrs. Sugden, Son, and Blood, and Chapman and Snape, of Leek and Newcastle; and Mr. J. Gallimore, of Newcastle, is the contractor for the buildings, which will cost £14,000.

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ILLUSTRATIONS.

CONVALESCENT HOME, LITTLESTONE-ON-SEA—CLEGG HALL, NEAR ROCHDALE.—THE NEW CAMPANILE TO THE CHURCH OF THE HOLY NAME, POONA, INDIA.—HOUSE NEAR GUILDFORD, SURREY, COSTING £750.—ARCHITECTURAL ASSOCIATION EXCURSION SKETCHES, 1890.—NEW OAK REREDOS, ST. JOHN'S CHURCH, KNOTTY ASH.

Our Illustrations.

CONVALESCENT HOME, LITTLESTONE-ON-SEA.

I HAVE been instructed by the Committee of the Convalescent Home (proposed to be erected at Littlestone-on-Sea, near New Romney, in Kent) to prepare drawings and scheme for the accommodation of 300 patients. The plan explains how the sexes are divided, and the chapel and lower hall effects this. The women have their sewing rooms, laundry, &c., and the men their workshops at either end of the wings. The materials to be used are Kentish rag, with Portland or Stoke Ground stone dressings, and green slate covering to the roofs, fireproof throughout.—PERCY G. STONE.

CLEGG HALL.

CLEGG HALL stands about 2½ miles N.E. of Rochdale. It has a somewhat uncanny look, with its grimy weather-stained gables and stone-spitters. Mills and workmen's cottages have been built near to, and the surroundings are further disfigured by a canal and railway, which pass in front of it. At present it is occupied by several families, the interior having been completely altered. The detail generally is rude, but effective. The central porch is a striking feature, although more curious than beautiful as regards its detail, the columns reminding one of Jacobean bed-posts. The present building belonged to the Asshetons, and was built by them early in the reign of James I. It stands on the site of an older structure belonging to the Cleggs, and, after passing to various families, came into the possession of Joseph Fenton, of Bamford Hall, by whose descendant it is still owned.

THE NEW CAMPANILE TO THE CHURCH OF THE HOLY NAME, POONA, INDIA.

THIS picturesque addition to the Catholic Church at Poona is from the design of Mr. Herbert A. Gribble, A.R.I.B.A., the well-known architect of the Brompton Oratory.

HOUSE NEAR GUILDFORD, SURREY.

THIS house is the steward's residence at Wonersh, near Guildford, Surrey. The requirements were two sitting-rooms, an airy hall and landing, and an office, four bedrooms, bath-room and lavatory, with hot and cold circulating system, kitchen, scullery, larder, and pantry, and a small stable, at a cost of £750, which has not been exceeded. The walls are 11in. thick, hollow tied, with strong wrought and galvanised wall ties. The facings are red brick and the roof of plain red tiles. Messrs. Mitchell Bros., of Shalford, were the contractors, who carried out the works from the designs and specification of Mr. W. Howard Seth-Smith, architect, of London.

SKETCHES FROM OXFORD A.A. EXCURSION.

THIS plate of sketches, by Mr. R. Phené Spiers, F.S.A., is given in connection with the series which have appeared in our pages during the past few weeks (see BUILDING NEWS, Aug. 8, 15, and 22, 1890), in illustration of our account of the Architectural Association excursion in the city and neighbourhood of Oxford. In this account of the buildings visited we have already referred to both the subjects represented herewith to-day. The first shows the vaulting of the choir of Christ Church Cathedral, which Cardinal Wolsey erected over the arcade. The view is taken looking east, showing also the rose window over the high altar. The doorway delineated on the second half of the plate is from St. John's College, and the sketch shows it from the Quad side under the piazza. This wing, which Inigo Jones built, to St. John's is an exceedingly refined and skilful design, quite the best example of Renaissance work in Oxford. The doorway leads from the inner quadrangle to the gardens, and on both sides the treatment of the opening with its architrave and pediment is the same. Some measured drawings of this building would be welcomed.

REREDOS AT KNOTTY ASH CHURCH.

THE Church of St. John the Evangelist, at Knotty Ash, a few miles from Liverpool, was an edifice of few architectural pretensions until recently, when the designing of a new chancel was placed in the hands of Messrs. Aldridge and Deacon, architects, of Central Buildings, North John-street, Liverpool. The additions, which are reputed to be exceptionally successful, were consecrated last April. The reredos we illustrate to-day occupies the space below the window at the eastern end of the chancel. It is made entirely of oak, and is 20ft. wide. It is conceived by the architects simply as a background for the ornaments it is to hold. It was made by Mr. Harry Hems, of Exeter, who also carried out the screens and pulpit in the same church. Messrs. Aldridge and Deacon have designed some oak fittings for the chapel in the south chancel aisle, which Mr. Hems is at present making, and of these we may, perhaps, give an illustration later on.

The great west window of St. Mary's, Oxford, is to be filled with stained glass, as a memorial of Dean Burgon, who was vicar of the parish for 13 years before his appointment to the Deanery of Chichester. Mr. C. E. Kempe, of Pembroke College, is the designer of the window. The subject is a "Jesse tree," with the figures of the four Evangelists in the lower lights, and also the arms of the 21 existing colleges in the University. The figures of those saints who are associated with the history of St. Mary's are to be introduced in the tracery of the window, and also the heraldic shields of several benefactors of the Diocese of Oxford, of the University, of Oriel College, and of Dean Burgon himself.

The annual inspection of the parks by the Glasgow Town Council took place on Wednesday, when the inaugurations occurred of the new drive in Kelvingrove Park by Lord Provost Muir, of the Doulton Fountain, Glasgow-green, by Sir Henry Doulton (by whose firm the fountain, which was one of the chief features in the Exhibition grounds last year, has been presented), and of the Steven Fountain, Cathedral-square, by Hugh Steven.

Two memorial windows have been placed in the north transept of Girvan Parish Church to commemorate the ministry of the late Rev. William Corson. The windows are the workmanship of Messrs. Ballantine and Son, Edinburgh. They represent "The Baptist's testimony to Jesus: Behold the Lamb of God," and Christ's address to Peter, "Feed my Sheep."

The contractors for the preliminary excavations for the Coatbridge Town Hall and Municipal Buildings began operations on Monday. The site has been presented to the burgh, and the buildings, which have been designed by Mr. Mitchell, the Burgh Master of Works, are to cost about £20,000. The site is adjacent to the Coatbridge public school and the new Technical School and Mining College, the memorial-stone of the latter of which is to be laid by Sir Archibald Campbell early next month.

A fine bas-relief was recently brought to light while some workmen were busy excavating the Via dei Crociferi, Rome, for the purpose of building a drain. It was of white marble, and represents a horse, on which is seated a female figure supposed to represent Victory. Another discovery has been made in the Piazza del Duomo at Verona. It is a tree in marble, having on one of its branches in Greek letters the words, "*Praxiteles epoiese.*"

The schools at Bagby, near Thirsk, which are at present much too small and dilapidated, are to be pulled down, and new ones erected, with master's house, &c. Messrs. W. Lewis and Son, of York, have been instructed to prepare plans.

COMPETITIONS.

OLDLAND, NEAR BRISTOL.—The School Board of this district propose to build a school at Cadbury Heath, near Warmley, for 300 children, and the 29th of September is the day for sending in plans. The official circular of instructions, signed by A. Ladd, who acts as Clerk to the Board, is a curious composition to issue from a body of educationalists. It states, for example, that "the Board do not *accept* any liability in asking for these plans. The architects must take all the risks of plans being accepted or not." It is comforting to know that "architects are to find their own levels." The final clause says: "The best-planned school, simple, not elaborate, is desired, to be built of Pennant stone, with freestone dressing and *Roman Tiles.*"

CHIPS.

The list of adjudications in bankruptcy in Friday's *Gazette* includes the names of Charles Henry Burstow, Horsham and Horley, in partnership with E. Burstow, under the style of E. and C. H. Burstow, architect and surveyor, and William Harries Tamlyn, Cardigan, land surveyor, inspector of nuisances, and highway and borough surveyor.

The Wigan corporation have appointed Mr. A. Taylor, at present inspector of nuisances to the Wallasey local board, to succeed Mr. J. R. Leggatt, who has been elected chief sanitary inspector to the vestry of St. Mary, Islington, N.

The will and codicil of Mr. Robert William Mylne, F.R.S., F.R.I.B.A., late of 7, Whitehall-place, and of Great Amwell, Herts, who died on July 2, were proved on the 12th inst., the value of the personal estate amounting to £3,686.

Mr. Goodwin S. Packer, architect, of Southport, has been instructed to carry out alterations consisting of new drying houses at Messrs. Butterwith and Hunter's warehouse, Bootle. Messrs. G. Wood and Son, of Bootle, are the contractors.

The sudden death occurred on Wednesday of Professor Carnelley, Professor of Chemistry in Aberdeen University. Mr. Carnelley, who was only 38 years of age, was educated at King's College School, London; Owens College, Manchester; and at Bonn. In 1879 he was elected to the professorship of chemistry in Firth College, Sheffield, and in 1882 to the chair of chemistry in University College Dundee. Two years ago he was called to the chemistry chair in Aberbeen, and already had attained eminent distinction in that town. He will be best known to our readers by his investigations into the contamination of the air in public buildings.

The Cambrian Archæological Association has decided to hold next year's meeting at Killarney, Ireland.

Mountnessing Church, near Ingatestone, Essex, was reopened last week, after restoration at a cost of £2,000.

The memorial stones of New Primitive Methodist chapel and schools at Redditch were laid on Monday last. Mr. Matthew J. Butcher, of Birmingham, is the architect, and Messrs. C. G. Hinns and Sons, of Redditch, are the builders.

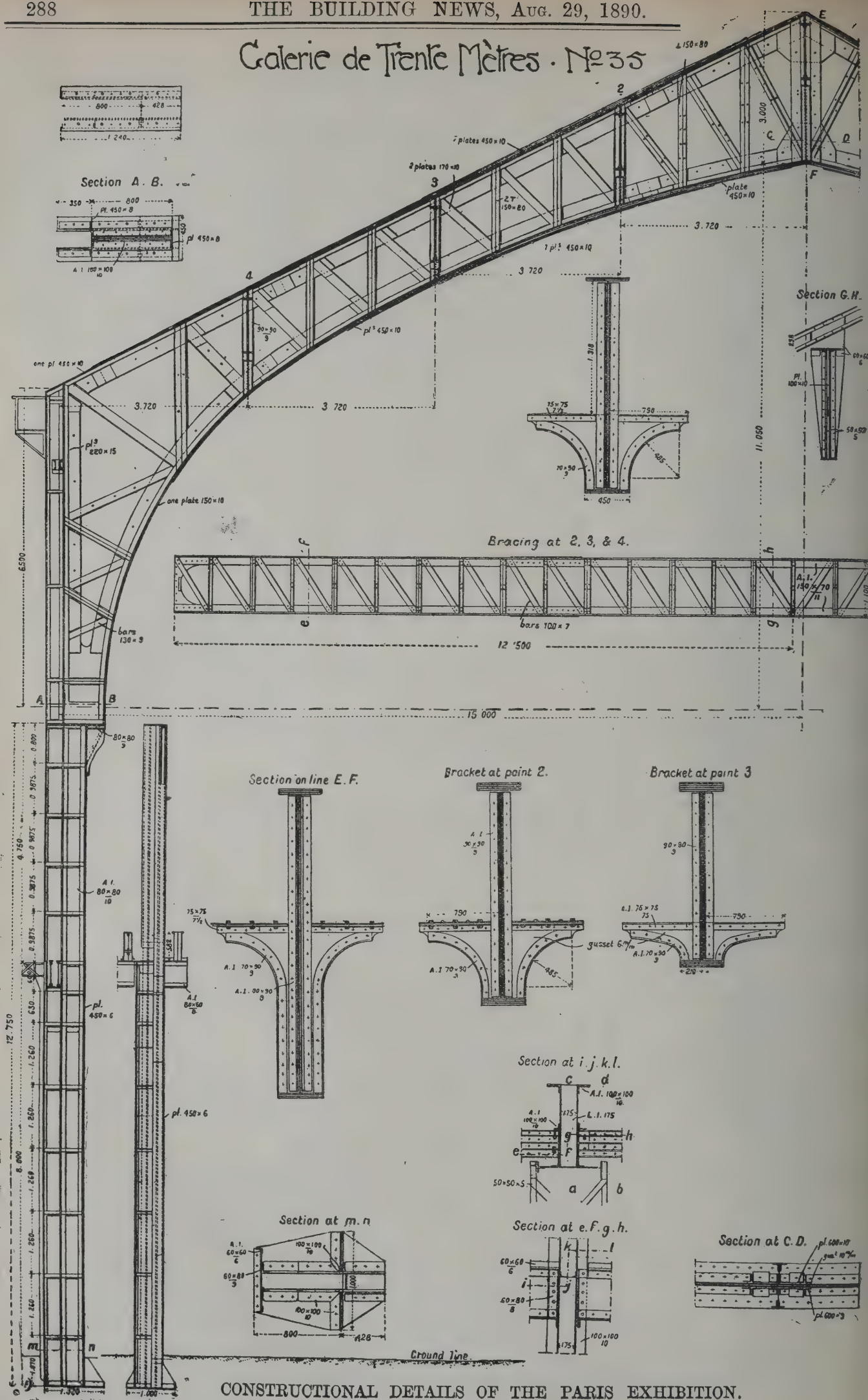
Mr. Richard D. Batchelor, the artesian well engineer, of Chatham, has over 60 wells and borings in hand. He has just obtained the contract for the well at the Sheppey Portland Cement Works, Queenborough, and the well and bore-hole for the East Surrey Water Company at their pumping station, Kenley.

In the case of Edward Brown, of Liverpool-street, City, and Vicar-terrace, Forest-gate, late of Harbury-street, Spitalfields, and Bow-road, E., who combined the professions and trade of architect and surveyor and licensed victualler, the discharge has been suspended for three weeks, from July 30, 1890.

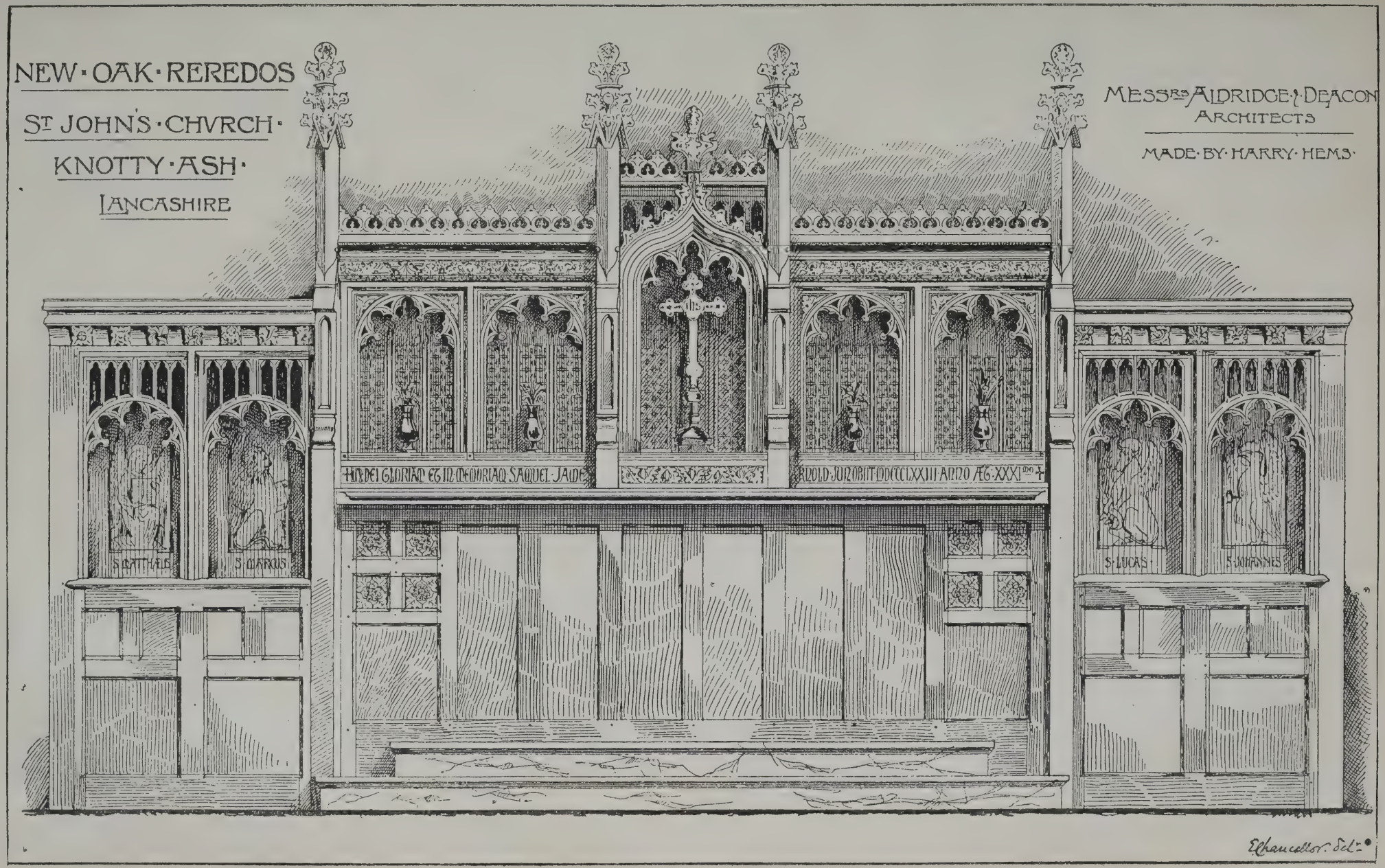
A temple of the Inca period has been discovered at Yurimaguas, at the foot of the Eastern Cordilleras, in Peru. It had an inclosing wall 80in. thick, the inclosure within being divided by other walls into halls and smaller chambers. The plan and the painted inscriptions resemble what have been found in other places ascertained to be ancient Peruvian temples. The Peruvian Government has, as a consequence of this discovery, resolved to undertake regular excavations on sites where temples existed prior to the conquest.

The Haslingden local board have invited four Manchester architects to compete for the building at the new cemetery at Clodd, the outlay not to exceed £2,500.

Mr. Barron, C.E., Wick, has been surveying the harbour at Stonehaven, with a view to its improvement and extension. A plan has been submitted to the harbour board showing the improvements and additions desirable, the cost of which is estimated at £15,000.



CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.


NEW · OAK · REREDOS
St JOHN'S · CHVRCH ·
KNOTTY · ASH ·
LANCASHIRE
MESSRS ALDRIDGE & DEACON
ARCHITECTS
MADE · BY · HARRY · HEMS ·
HIC DEI GLORIAM ET IN MEMORIAM SAMUEL JAMES
OBIIT DIE XXIII MENSIS AUGUSTI ANNO DOMINI MDCCCLXXIII ANNO ÆTATIS XXXI
S · MATTHÆUS
S · MARCUS
S · LUCAS
S · JOHANNES
E. Chancellor, Del.

WAYSIDE NOTES.

IE Morley Town Council have fulfilled all our anticipations, and placed their compe- before the profession. Reading the ad- sement, I feel doubly sure as to the result— r, at least, as regards the number entering struggle. The competitors are allowed e time, the "entrance fee" is small, and a er premium of £25 has been included over above the two we expected; all of which s that architects will swarm round them flies round a treacle-jar, only with less inty of tasting the sweets.

mpetitors will please to remember some in November. The later weeks of the h of fogs and other winter urban joys will these gentlemen busy. The municipal ing-house designs go in on or before the , the Morley plans on the 21st, and the ntry Baths on the 30th. Those for the re- truction of Buckingham Palace, and for the ion of a skittle-alley at Burlington House be in exactly on Nov. 31. These dates ld be borne in mind by the double-barrelled petitor who goes in two competitions at a , and who should reflect that, although bundance of days are allowed for the com- ions named, the amount of draughtsmanship ired in each case is likely to be considerable.

here is a building, lately completed, that has ed a more than ordinary impression of archi- ural magnificence upon the public mind. I r to the Portsmouth Town Hall. Speaking he proposed building at Morley, I am re- led of this one, and how it has been extolled by public press. Of its present completed aspect not competent to speak, excepting by virtue rtain illustrations that have been published. en last at Portsmouth, I remember this build- was not so far advanced as to have its first in position, and, although I then curiously mined the work executed, and, after much -craning and peering through cracks and ings in the hoardings, &c., managed to get e idea of the intentions of its designer, I e no authority to criticise it as it now ds. That business I have left to my ers, who mostly, I notice, regard the k with an air of condescending superiority, encourage youthful conceit to turn up its at orders of columns and simply quarried sic details, and to think of velvet coats and le glass, and sigh. Now I must confess to a et enjoyment when I see people's noses put of joint at the sight of honest Classical mns, with none of the thunder-and-lightning inality—no aldermanic belly for entasis, and gouty base or bloated capital; and I am well sed to find another building completed, the neter of whose columns bears some sort of tion to their height. I take it always as a ht antidote to the disease of originality-at- -price that holds us at this day, and at times atens to develop to an alarming crisis.

Ve must return for a bit to sanitary matters, ng that the Sanitary Institute is now well er way with its Brighton Congress. I am at es inclined to think that it is with sanitation t is with many other matters in this world, and t is that we know a lot about its principles, do not fail for lack of scientific knowledge, rather because the machinery for enforcing observance of healthy practices, &c., is not ffective in working as it might be. In the e of jerry-building, we should not profit reat deal from congresses on the subject so g as the law allowed the evil to continue. I thinking now of an incident at Milton-next- ingbourne, the facts of which appeared in papers early this week. They are too long give *in extenso* here; but, broadly speaking, y relate to a nuisance caused by "immense osits of offensive manure" brought by barges, allowed to lie on the wharf for weeks ether. So far as the ordinary reader can ke out, the responsibility for the nuisance thus ated was not easily placed on the shoulders of party or parties, feebleness of action cha- terising the whole matter; and when at last Milton Board of Improvement Commissioners to take action they complained of the task. w it appears to me that if the laws—bye or erwise—had been effective, the nuisance could er have occurred. Having been shown to e been otherwise, similar things may occur again in spite of sanitary congresses. Sanitary laws and regulations enforced with more rigour are what is required.

The split in the sanitation camp was very much in evidence at Brighton on Tuesday. Dr. G. Vivian Poore, President of Section I, devoted to sanitary science and preventive medicine, delivered an address on the "Living Earth," advocating the direct earth system of sewage disposal. At the conclusion of the address, Sir Douglas Galton objected to the principles enunciated, and advocated drainage into water. The public didn't profit much by this. It is an old saying about the differences of doctors, and here we have an example of it. The fact is that in neither the water nor earth systems has a true solution yet been found of the problem of the sewage disposal of large cities. Foulness is apparent in either case—in the former in rivers and streams, in the latter in the air; for so far I have never met with a so-called sewage farm but what it filled the air for wide districts with a pestilential odour. The Thames, the Liffey, the Clyde, the Mersey, and the Irwell, on the other hand, are, as Dr. Poore pointed out, standing testimony to the shortcomings—to use a mild term—of the water-drainage method. There is therefore much cause for disagreement between even specialists as to the best practical and theoretical systems for the sewage disposal of large cities; but as so much attention and study is now being directed to the question, we may yet hope for some solution of the problem, when, we may hope, we shall not be compelled to talk about it so frequently.

The first meeting of the members of the Commission appointed by the County Purposes Committee of the Corporation of the City of London to inquire into the sources of the water supply of Manchester and Glasgow, with a view to purchasing or placing under a public trust the water supply of London, was held on Tuesday in the Glasgow City Chambers. In the examination of Mr. J. M. Gale, the engineer to the Glasgow Water Commissioners, I was surprised to see it stated as a misfortune that in general the Scotch citizens and townsfolk use more water per head per diem than the English people generally. As an instance of the *reckless* use of water in Glasgow, Mr. Gale stated that even in the small houses in Glasgow—houses of £10 and £12—there were baths, shower as well as plunge. In this part of Great Britain we should many of us rejoice to think that people renting such humble tenements had such a wholesome liking of cold water. Perhaps Mr. Gale would like a few companies of the host of the Great Unwashed from our own city, in exchange for the reckless Glasgow householders with their wasteful shower and plunge-baths? We should be well enough satisfied with the bargain, being prone to indulge in fancies that a fondness for ablutions goes hand-in-hand with moral progress and physical development. The Glasgow Water Commissioners would save by the exchange, and thus be able to effect that reduction in the consumption of water for domestic purposes in that city for which they once strove and ignominiously failed—a fate deserved by so barbarous and unenlightened an endeavour. As regards the rest of the happenings at the meeting in the Glasgow City Chambers, I don't think that the commissioners will have learned much other than that Glasgow enjoys an unpolluted source of water supply in Lochs Katrine and Gorbal, and that similar advantages would be an immense boon to Londoners now drinking semi-purified Lea and Thames waters.

Bumbleism is up in arms at the idea of reforms that may follow the conception of a satisfactory scheme of London District Councils. Believing that a scheme for the establishment of district councils has been formulated by a sub-committee of the Local Government and Taxation Committee of the London County Council, proposing extensive alterations in the present administrative areas of Metropolitan local government—believing, and doubtless feeling in heart, that at last a blow may be aimed at the scandals and petty squabblings that have rendered it famous in history, Vestrydom has risen in a panic, and hastily delegated and memoralised the Prime Minister. It trembles for its life, and, I may hope, with some reason. When Mr. Ritchie first suggested the district councils it was to rid the city of the burden and annoyance of its vestries, and to supplant the butchers, bakers, and candlestick-makers with persons more qualified to carry on local government. This I hope and trust it may do, and just as the Metropolitan Board of Works was ruthlessly swept away to make room for the County Council, so should the vestries be wiped out of existence, and their places taken by an entirely new organisation, even if the ratepayers do have to expend that money—which in their memorial the vestries so tearfully deplore—on new buildings for municipal duties.

The memorial contains little in the way of useful suggestion as to the arrangement of the district councils, but it contains a clause, subheaded (*b*) to the effect "that the office and functions of the district surveyor, under the Building Acts, should be in the hands of the local Boards and their officers, with an appeal to the London County Council." In its dying struggles Vestrydom clutches at the district surveyor! How it would have liked years ago to have got him under its thumb, and to have reduced the honoured official to a mere uniformed and salaried Tom Pinch-like drudge! The fees of the hard-worked district surveyor have long been coveted by Mr. Bumble. Hear what he says in the memorial:—"With regard to the transfer of the office and functions of district surveyor under the Building Acts . . . the district surveyors of the local authorities are paid by salary—*a more convenient and satisfactory arrangement.*" The appeal is almost pathetic; but it is all in vain. The district surveyor has served the public, who have found no fault in him. With the Vestry it is long disgusted—disgusted with the petty scenes and squabbles that are periodically reported in the press, and served up as light recreative literature along with extracts from *Punch* and *Fun*. The vestries have destroyed themselves, like the Kilkenny cats, and nothing now remains but to clear the ground for a system of local government on entirely re-modelled lines. GOTH.

CHIPS.

Memorial stones of a new Wesleyan Chapel were laid at Duddin, Cheshire, last week. The building will be of brick and stone, with pitch-pine fittings, and will seat 200 persons. Mr. J. Wynne, of Manchester, is the architect, and Messrs. George Wright and Sons, of Kelsall, are the contractors; the cost will be £700.

Professor Wilhelm Gentz, of Berlin, a well-known painter of Oriental life and nature, has just died in his sixty-eighth year. He was a pupil of Klöber's, and from 1845 to 1852 pursued his studies at Antwerp and Paris, afterwards travelling in Spain, Morocco, Egypt, and Turkey. His masterpiece is the painting of the entry of the then German Crown Prince, the late Emperor Frederick, into Jerusalem, in 1869. It appeared in 1876, and was soon afterwards bought by the Berlin National Gallery.

While one of the workmen engaged in the construction of the ladies' vestry on the east side of the north transept of St. Giles' Cathedral, Edinburgh, was demolishing part of the roof of an existing apartment, he found an upper right-arm bone lying on the top of a lath-and-plaster ceiling. It is conjectured that this is the famous arm of the patron saint, till the Reformation, the most precious relic of the church.

At the Theatre Royal, South Shields, on Monday, Mr. William Newman, head carpenter, while arranging scenery at the top of the building, fell to the stage below, a distance of 40ft., and was instantly killed. The deceased was 36 years of age.

Mr. J. S. Pickering has been appointed engineer and surveyor to the local board of Nuneaton, out of 80 applicants for the office, at a salary of £150 per annum. Mr. Pickering is allowed to retain his present appointment as manager of the East Warwickshire waterworks.

The Bournemouth direct line has caused a very large increase in the amount of traffic to Brockenhurst station, and a turn-table and additional siding accommodation have just been provided at that junction. The work has been carried out under the superintendence of Mr. Baines, of Ringwood, the district superintendent of works and ways, and Mr. E. Wilcox, the permanent way and works inspector. Messrs. Mowlem were the contractors. —An entirely new water supply has been provided for the town. A well has been sunk, over 40ft. deep and 9ft. in diameter, and a tank capable holding 18,000 gallons has been erected, a steam-pump being employed to raise the water.

THE SOCIETY OF ARCHITECTS' SUMMER EXCURSION.

ON Monday morning last the most successful excursion yet undertaken by the Society of Architects was commenced under the leadership of the President, Mr. Robert Walker, A.M.Inst.C.E., of Cork. The county selected this year has been Kent, and an itinerary tour has been arranged in preference to the plan formerly adopted of selecting a centre and making daily excursions thence, and the result so far has been most satisfactory, the full and interesting programme attracting a large attendance, and even the weather—fickle as it has been of late—having proved just such, with its clear lights and changing shadows, as to add charm to what was already enjoyable.

The party first met outside the richly-carved Norman doorway of Rochester Cathedral,* and were there met by Mr. George Payne, F.S.A., hon. secretary of the Kent Archæological Society. He conducted them across the Norman nave into the Lady-chapel—built in the south-west corner between the main south transept and the south aisle—and there he read the chronological table, prepared by Mr. W. H. St. John Hope, M.A. (assistant secretary of the Society of Antiquaries), who was himself to have conducted the members, but who was prevented from doing so at the last moment. Mr Payne, however, proved a most efficient guide and substitute, showing how the cathedral grew, and pointing out the various tombs and monuments. One tomb in particular he drew attention to as having been found in the Saxon graveyard, and illustrating the very earliest form of Christian burial, when coffins were formed of stone slabs, in the place of the body being covered with a mere tumulus or heap of unwrought stones, and before the hewn sarcophagus was formed. This tomb is now placed in the chancel of the cathedral. Afterwards Mr. Payne drew the members after him to the crypt, and they were greatly interested in the Late vaulting, evidently introduced in order to strengthen the original Norman work. The last portion inspected was the new work upon the choir screen, now being carried out under the direction of Mr. J. L. Pearson, R.A., and then the party entered the picturesque garden of the Deanery, and were photographed in front of a background of Norman walling, and a fine Norman door.

After lunch, which was kindly provided by Mr. J. O. Moore, the Mayor of Rochester, the well-known Elizabethan house, known as Restoration House, was visited. Here the members were met by the owner, Mr. S. T. Aveling, who acted as guide for the remainder of the day. His own house was full of interest, with its E-shaped plan, in quaint compliment to the reigning Queen, its picturesque and comfortably-arranged double staircase, of timber with wood panelled ceiling, and its wealth of curious detail, lovingly restored to its former place and use by the present owner, who has taken pride in his house, and his done his best to discount the effects of the vandalism of his predecessors. One of the rooms, that in which Charles II. is said to have slept just prior to his Restoration (from which event the house obtains its name), has been surrounded by a series of wall paintings executed with care and delicacy, though in a style which reminds one of an earlier date than that of the house itself, by its present owner.

Rochester Castle, which was next visited, is well-known, and has been described; but its bold keep and picturesque arcade which, at the first-floor level runs lengthwise along the centre, with its strong Norman tiles and zig-zag mouldings, could never have looked much better than upon this bright afternoon. The members stayed there long, lingering over the hoary walls and admiring the views obtained therefrom, while the more critical noted the construction of the stairs, exposed to view by the removal of the finished slabs, marking how the centring for them must have been made, the marks of the timber laggings being plainly visible, and observed how the portcullis was worked from the chapel above.

Eastgate House, which was the last place inspected that day, dates back to 1590, and is a rambling, picturesque old timber dwelling, with bay windows, rich Jacobean over-mantels, and boldly plastered ceilings in wonderful preservation, especially considering that it is at present used as a labourers' club. In its panelling the gradual development of the mitred joint can be traced, the earlier form, when the mouldings on the solid were but worked off without any attempt to form an angle joint, being evident on the ground and first floor, while upon the two upper floors, evidently panelled at a later date, and in the still later over-mantels, were seen the first rude attempts, and then the finished mitre. To the ladies who were with the party, though, the greatest interest lay in its connection with the late Charles Dickens, and tracing in it the Ladies' Seminary of the "Pickwick Papers," and the Nuns' House of "Edwin Drood."

At tea, the party, which now numbered half a hundred, were entertained at the King's Head Hotel by Mr. G. E. Bond, a local member, and afterwards they journeyed on to Maidstone, to sleep there in preparation for their next day's work.

Tuesday commenced with a visit to the Museum at Maidstone,* where the members were met again by Mr. Payne. Leading them into the picturesque old brick and timber building, which, dating back to 1540, is now being enlarged to meet the requirements of one of the largest provincial museums, under the direction of Mr. H. Bensted, F.R.I.B.A., he described to them the fine collection of antiquities stored there. He pointed out particularly two leaden coffins of Roman date, with bold stamped ornaments upon them, and some Roman roof tiles of much the same pattern as that adopted in recent years by the Broomhall Company. The examples of various descriptions of early Kentish pottery were scarcely of architectural interest, though of archæological value; and the same remark applies to most of the objects in the private collection of the Kent Archæological Society, which was thrown open for inspection. It is a most representative collection of Anglo-Saxon relics, however, and the members were much interested in the description of the weapons, armour, and ornaments found in Anglo-Saxon tombs. Amongst the things found was almost invariably a bucket at the feet of the deceased, and Mr. Payne facetiously derived the common expression, "to kick the bucket," from this ancient custom. The fine-art collection, including some pictures by Sir Peter Lely, and the naturalistic galleries were described by the curator, Mr. Bartlett, and then the members put themselves under the guidance of the Rev. Cave-Browne to be conducted over All Saints' Church.† His description of this handsome building was exceedingly full and interesting, although he differed from most authorities in ascribing the nave to an earlier date than the chancel. The President, and most present, thought him to be mistaken, for not only the general feeling, but every detail, coincides throughout, and Perpendicular work, even of the bold type exhibited, is rarely met with at an earlier date than 1395, when Archbishop Courtney is known to have built the chancel. Mr. Browne's reference to the slightly different orientation of the former edifice from that of the present church, as shown by the positions of the bases of more ancient nave piers which have been found below the present floor, led to an interesting short discussion, and the difference was generally ascribed to the different times of year at which the two edifices were orientated, the line having most probably been set out at six in the morning upon the patron saint's day, and the past and present churches having had different patrons. Attention was called to the matrices of two fine brasses, both originally upon altar tombs, and to a sedilia of four seats upon the same level.

After lunch, partaken of at the Star Hotel, brakes arrived to convey the party to Leeds Castle; but, unfortunately, soon after it was reached, rain began to descend, and the best, the untouched external portion, of this once important and famous castle could scarcely be inspected. Standing upon three islands, in the midst of a wide mote, originally with drawbridges between the islands, it must have been well-nigh impregnable before the introduction of fire arms. Though the chapel windows are fine specimens of the Late 13th-century tracery, some parts of the building are said to be still, yet most of the original work is of Tudor period. The best view is that obta from the approach when the Castle is seen a the moat, and its three parts stand out b against the sky; but the interior is disapp ing, and much valuable time was lost i inspection. As a result, even the unique le at Detling Church,* which was next vis received scant attention, and the invitation o vicar, the Rev. J. Cave-Browne, to after tea had most reluctantly to be declined. It still raining when the party returned to M stone, where they had tea, and whence subsequently proceeded by train to Tonbri where those who had not taken the precauti secure beds some days in advance were compe to find lodgings as best they could, for the h had been filled by the unusual influx of visit

Wednesday morning opened fair, and man the more enthusiastic began the day wit couple of hours' sketching in Tunbridge be breakfast. This partaken of, brakes come ro and a most beautiful drive was undert through some of the best scenery in the fe county of Kent, and visitors from dis counties were no less delighted with the s farmsteads and cottages, almost all well desig than with the ever-changing views. Bidboro Church was reached about 11 o'clock, and Rector, the Rev. H. C. Elliss, received the p there, conducting them over his pretty l church. This, he said, was of many diffe dates, a portion of the north wall being ascri to the beginning of the 11th century, while south wall is Norman also, the northern arc Transitional, and the tower is a solid struct erected in the 15th century. It was restore 1876 by Mr. Ewan Christian.

Before proceeding, a few moments were sp in inspecting a half-timbered farmhouse, restored, and of more than usually pictures outline, with some good detail in it; and t the drive was continued to Penshurst Place,† seat of Lord De L'Isle and Dudley. The sight of the village, with its church and "Place" in close proximity, and several ha timbered houses near, the whole nestling u the slope of a hill amidst luxuriant foliage, most picturesque. But it scarcely prepared members for the sight which met their vi when, having left the brakes and passed throu the churchyard, they came in view of the gr house, with its many-gabled ends, twis chimneys, and windows of many different da —although it was evident that the greater p of the building was erected in the 15th centu a few details having been altered during t building epoch of Elizabeth's reign. T banqueting-hall, with its slightly-raised dais one end, and musicians' gallery of richl panelled oak at the other, to say nothing of open-timber roof, is exceptionally fine and w preserved, while the winding staircase leadi from it to the ballroom, lighted by 14th-centu traceried windows, is eminently picturesq Thence the party was conducted, by special pe mission, through many rooms and galleries, co taining tapestry, pictures, armour, and cabin of remarkable interest and value, and finally in the cellars beneath the banqueting-hall, t vaulting of which dates from the reign of Edwa III., and it is noticeable by the ribs springi directly from the octagonal central colu without the intervention of any capit From all points of the building sketch and photographs were taken, and then again t party collected and drove on, until the village Chiddingstone was reached. It consists of b half-a-dozen houses and a church; but they ma up for being few in number by their extraord nary beauty, all dating from the end of the 17 century, and being of half-timbered constructio Here lunch was partaken of, and then again t sketch-books came out, every detail in the pla being, one would imagine, noted during the ne hour, if one could judge by the enthusiasm a industry displayed. To see this village alone worth a long journey, for to see it is in itself education into the mode of living of our for fathers. The sketch-books, however, were n even yet allowed to rest, for Hever Castle, th former residence of Anne Boleyn, was ne visited, and the party conducted over it by i

* The following illustrations of Rochester have appeared in the BUILDING NEWS:—Sketches by Leonard Martin, May 16, 1890; Cathedral, west doorway, June 24, 1870 (double-page plate in Sketch-book Series), and March 1, 1889; new stalls by J. P. Seddon, Oct. 29, 1880; Castle interior, Feb. 11, 1870; Eastgate House, Sept. 30, 1881 (clubroom, by H. O. Cresswell), Aug. 6, 1886.

* Illustrated in the BUILDING NEWS for Feb. 23, 1877; staircase, Jan. 11, 1878; overmantel (measured details by E. H. Dance), July 13, 1883.

† See illustration in the BUILDING NEWS for Aug. 20, 1881.

* Sketched in the BUILDING NEWS for April 15, 188 and Feb. 8, 1884.

† See illustrations in our issues of Sept. 24, 188 Aug. 3, 1888; and May 10, 1889.

Mr. E. Heard. Here, again, was a wealth h-century detail to be studied, the fine ay, with its portcullis and gate complete, still intact; but, of course, the ancient ridge across the moat has given place to a olid modern structure.

n the drive back to Tunbridge the modern e of Leigh was passed through, and drew remarks of admiration from all. As one t showed what could be done, without great se, in any rural district, by the exercise of e ingenuity and taste.

en Tunbridge was reached, the already party was again augmented in anticipation ceeding days of even greater interest; and ening was spent in most agreeable fashion, ıo being brought into the large tea-room, nging indulged in.

TRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—XI.

By Banister Fletcher, Jun., A.R.I.B.A.

E "Galerie de Trente Mètres," which separates or cuts into two the main division e "Palais des Industries Diverses" and at one end, into the "Galerie des ines" by the connecting dome, and to ther in the great dome, looking on the p de Mars, is 626ft. long and 98ft. in . The length of the roof is divided into bays or divisions, the columns of which are apart, and correspond with the bays of the ustries Diverses" on either side. (No. 31.) e interior of the roof (see No. 35, from *eering*) has an inclination of about egrees, but the interior of the trusses is d to the form. The heights of the columns ft. 10in., and the back of the roof principal rises in a line with the back of these ards to a further height of 21ft. 3in. The d floor to the level of the gutter is 63ft. which is considerably above the level of to the "Expositions Diverses" themselves. vertical space above these abutting roofs erefore filled in with stained glass, and is no top light in this gallery. The me height from the ground to the ridge ft.

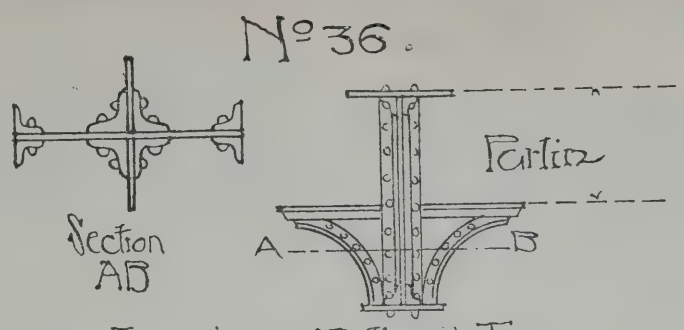
consequence of the great distance be- n the principals, the purlins are unusually ; there are seven running along the whole h of the gallery, one at the ridge and three ch side, and these rest on brackets attached e upright framing in the principals. The ns are 3ft. 3in. deep, and 12ft. 2in. apart, osed of angle irons and plates, and N ng in between. There are fourteen iron rs to each bay resting immediately on the ns, and these are carried right down the cal part of the roof, and rest on a girder g the form of the end of the abutting of the "Expositions Diverses" on each

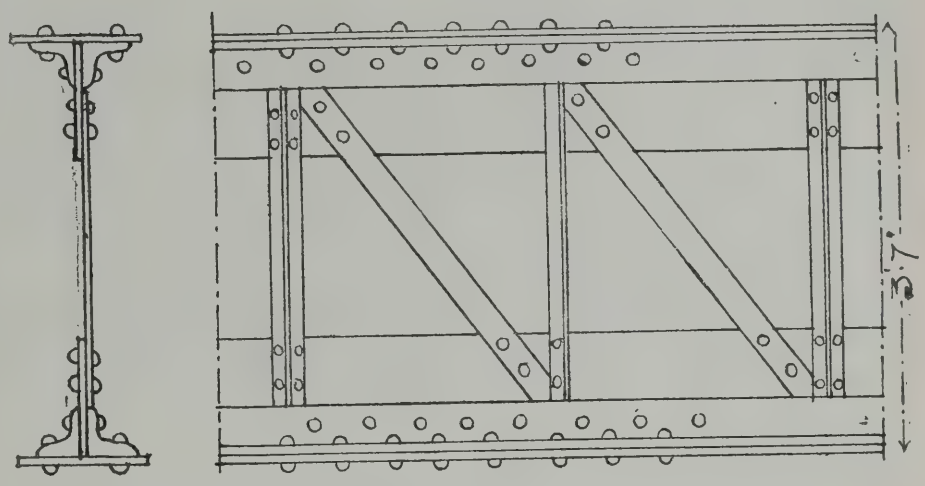
neath this, at the level of the springing of roofs, runs a longitudinal girder, binding principals together (see diagram) and above inclosed in these triangular spaces it is filled with brickwork. The designs for the ances to the different sections, it will be ed, are made with a pediment to hide this. ne particular form of this roof was necessitated use it had to follow the outline of the great of the central dome.

ne main trusses are made up as follows 35):—The Extrados: (*âme*) web, 15·75in. 35in. thick; (*semelle*) flange, 17·72in. by n. thick; (*cornières*) angle-irons, 3·9in. by n. by ·39in. The Intrados: web, 13·78in. ·35in.; flange, 17·72in. by ·31in.; angle-s, 3·9in. by 3·9in. by ·39in. Besides this, tional flanges are added as required. (See ving.)

t the ridge, not being articulated, greater ngth was necessary, because of the pointed , and it is strengthened by webs and cover- plates in such a way that there is at this t five thicknesses of iron. The intrados and ados of these principals are united by a system prights in T iron and of lattice pieces in flat iron, or in T iron, according to whether they in tension or compression.

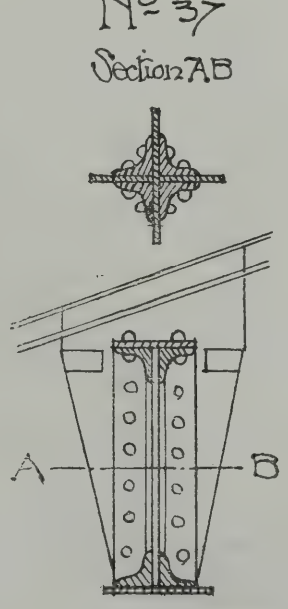
t the junction of the purlins with the trusses uprights in the truss are, however, formed of angle-irons, which receive the bracket of purlin between the angle-irons, and is ted up. On this bracket rests the purlin, as cated in the note above.





PURLINS AND ORDINARY RAFTERS.

The purlins (No. 36) having, as mentioned, a length of 82ft., which great span was necessitated by the spacing of the principals to suit the spans of the roof on either side. The "Expositions Diverses" are composed of a top and bottom web with angle-irons and flanges, and with N trellis framing in between. The purlin being 3ft. 7in. deep, the flanges being ·31in. thick.



Where the supports come the trellis framing is doubled and formed of two plate irons, 3·93in. by ·27in. The uprights are composed of two angle irons 2·75in. by 2·75in. by ·27in. thick. At a distance of every 3ft. 6in. at the place where the framing of a rafter occurs, the uprights of the purlins are composed of four angle-irons which clip a gusset piece ·23in. thick, placed to give support to the upper flange of the purlin. (See sketch No. 37.)

The ridge purlin, which carries the ventilating lantern, is thickened top and bottom by seven millimètres thickness of flange, which make the top and bottom flange 59in.

Ventilating lantern is 37ft. 6in. long, and is covered with zinc.

Standards (No. 35) are composed of two solid webs, each having a flange and connected by a couple of angle irons at each end. These standards are connected horizontally 26ft. above the ground by a double trellis beam, about 1ft 7in. high, which supports the vertical iron framework of the lateral framing. These standards also receive at the same height the extremities of the 25-mètre roofs on either side. The beam 1ft. 7in. high, connecting the standards mentioned above, is supported along its length by two solid iron standards, 11in. by 11¾in., and having a height of 39ft., which support the upper triangular framing formed by the abutting of the galleries of the "Expositions Diverses." On each side of these standards is a casing of "Maçonnerie" about 4ft. 6in. in width.

The bays which form the entrances to the French Industries on either side of this gallery form, probably, the most important interior decoration in the whole Exhibition, each section choosing its own architect. These designs are not only curious, but interesting, all the designs having to fit the same frame as it were, and each may be said to differ largely from its neighbour. These designs and their special *motifs* may be just glanced at now.

On Saturday, in connection with the centenary celebration at Marsden, near Leeds, the foundation-stone of a new Congregational Sunday-school was laid. The school, which is being built close to the chapel, is to cost £1,400. The style is Gothic, treated in a simple manner, and the work is being carried out from plans by Messrs. J. Kirk and Sons, of Huddersfield and Dewsbury.

Building Intelligence.

Aberavon.—A stained-glass window and a reredos containing five figures, given as a memorial of the late Mr. Llewellyn, were dedicated at the parish church on Tuesday week, together with a new pulpit and chancel floor. The reredos is constructed of rich-coloured marble and alabaster. The centre is formed of five arches, containing therein figures in white marble, of which the centre represents the Good Shepherd, while the other four are filled in with figures of the four Evangelists. All the niches have mosaic backgrounds, and the whole is finished with a moulded and carved cornice. The panels are carved throughout. The marble and alabaster work was prepared by Mr. Clarke, of Llandaff. The figures, by Mr. H. H. Armistead, R.A., were exhibited at the Royal Academy this year. The window is filled in with painted glass by Mr. Dixon, the subject being the Adoration of the Magi. Messrs. Kempson and Fowler, of Llandaff, designed the work. A drawing by them of the reredos was exhibited at this year's Royal Academy. The same architects have also designed complete fittings for the chancel, of which already the pulpit and screen in alabaster, the tile floors, and the steps have been executed. They have also decorated the walls of the chancel in colour on the plaster work. New gas fittings have also been introduced.

Bridestowe.—On Wednesday week the re-opening services, after partial restoration, of the church of St. Bridget, Bridestowe, were held. Some 20 years ago partial restoration took place, and now a second section of the work has been carried out. The chancel has been renovated, new oak seats have been put therein, and new altar and reredos of oak and Devon marble provided. A new doorway has been made to the vestry, and the lower part of the walls in the chancel have been lined with tiles specially designed. Messrs. Luscombe and Son, of Exeter, have been the contractors, and Messrs. Medley Fulford and Harvey, of The Close, Exeter, the architects. The cost of the restoration has been about £600.

Craig-y-Nos. — The bijou theatre which Madame Patti has erected at her Welsh Castle of Craig-y-Nos was informally opened on Thursday night. It will accommodate 180, and is Italian in style. The building is lighted with electricity, and is provided with appliances for the performance of opera or pantomime. The dimensions of the auditorium are 42ft. by 27ft., with a curved end at the back, in which is a small gallery. The height is 22ft., with a cove ceiling, supported by twelve Corinthian columns, dividing the walls into panels. The floor has a unique peculiarity; while it slants towards the stage there is an arrangement beneath by which it can be raised at the stage end to a level with the stage, so that a ball-room can be provided. The drop scene represents Madame Patti, as Semiramide, driving a chariot. The architects were Messrs. Bucknall and Jennings, of Swansea and London, who have arranged also the stage fittings and scenery. The builder was Mr. H. Smith, of Kidderminster. The scenery was painted by Mr. W. Haim, of London; the electric lighting supplied by the Wenham Light Company; the decorations by Messrs. Jackson and Sons, of London; and the heating apparatus by Mr. Legg, of Swansea.

The Salvation Army Temple at Exeter, which was at one time used as a meeting place for the "Friends," has just been considerably altered and enlarged. Seating accommodation has been increased from 900 to 2,000 persons. Mr. G. Coles, builder, of Exeter, carried out the work from plans by Mr. J. Williams Dunford, architect, of 100c, Queen Victoria-street, London, E.C. Mr. T. Morgan acted as architect's clerk of works.

On Saturday the corner-stones of a new mission-room and school, in connection with the parish church of Armley, near Leeds, were laid. The building, which is 70ft. by 30ft., is to be faced with pressed bricks. On an upper floor is a large room, running the whole length of the building, having an open timbered roof, and with a committee-room attached. It will accommodate 300 people. On the floor below are a schoolroom and classroom, together accommodating 150. The building, which is Early English in character, is being erected by Mr. Jonah Walker, of Armley, from plans by Messrs. Smith and Tweedale, of Leeds, and the cost will be £1,000.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLI., XLIX., L., LI., LIII., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Perplexed. (The arrangement you send us may be described as a "winged staircase," or staircase with twin flights. We are not aware of any other definite term being given to this variety of double-flight stairs.)

Received.—B. and M.—J. E. and Co.—E. G.—G. S.—E. A. W.—T. J. M. F.—A. D. W.—F. W. T.—G. T.—W G. and B. S. Co.

Correspondence.

COTTAGES, DAGENHAM, ESSEX.

To the Editor of the Building News.

Sir,—Pursuing the theme of your correspondent, the Vicar of Dagenham, last week, I may trouble you perhaps to let him and others interested in this subject know that I have, for several years past, acting on the instructions of a client, been endeavouring to let on building lease a plot of freehold land close to the village and on the main road (to Rainham), at present tilled by a gardener, and for which I have prepared plans for laying out the roads and covering with cottage property. Upon the frontage there is room for 19 houses and 4 shops, and for 37 houses with long gardens abutting upon the rear or cross roads.—I am, &c.,

Edward Crosse, Architect and Surveyor.
32, Bermondsey-square, S.E., Aug. 27.

At a special meeting of the King's Norton rural sanitary authority, held last week, Mr. R. Godfrey, A.M.I.C.E., was instructed to prepare plans for enlarging the hospital for infectious diseases, which was opened last year, and which has received 240 patients since October 1, 1889.

A new Free Presbyterian Church is in course of erection in Academy-road, Moffat, N.B. Competitive plans were submitted in March last, and those of Mr. D. B. Burnie, architect, Edinburgh, were selected, and are being carried out. The style is Early English Gothic. The church is to be built of whinstone from Moffat Well Quarry, with dressed red freestone facings from Corncockle Quarry. It will contain 700 sittings, and the height of the spire will be 123ft. The estimated cost is £4,200. The foundation-stone was laid on Friday.

Intercommunication.

QUESTIONS.

[10346.] — **Keble College Chapel, Oxf**
Would some kind reader tell me where the be
brown-red pressed bricks of the lower part of the i
were obtained, and give me some idea of the p
London?—R. W.

[10347.] — **Liability to Build Wall.** — I
pulled down an old house, I have thrown open my
bour's end, his house being built up against mine w
the least bearing in, or claim on my wall. Am I
to build him an end to shut up his house, as I do no
a wall where the old one stood? If so, on whos
must the wall be built, his or mine? I shall be g
have the opinion of some one who has had experie
such a case.—T. G. W.

[10348.] — **Domestic Hot-Water Supply**
carrying up the expansion or rising-pipe from the
hot-water cylinder up above cold-supply water c
is there any objection to turn the end down so as
near to, or slightly below, surface of cold water, so
avoid dampness in apartment where steam at ti
liable to blow off?—Learner.

[10349.]—**Kent.** — Will some one acquainted
Kent give me a few names of interesting e
churches, and domestic buildings, and where sit
that are worth visiting; and what part of Kent
richest for churches of a small rural type? Any
mation as to the best routes will be of servic
Intending Tourist.

[10350.]—**Spires: their Design.**—(1) Are
any examples of the construction of those? (2) W
an easy rule to entasise a spire? (3) Would
desirable to employ terracotta instead of stone? I s
like to know if there are any terracotta spires i
country?—Cyrus.

[10351.]—**Lead-work.** — How is the weight
lead used in flashings, gutters, &c., on a building
checked, in order to ascertain if it is as specified? Is
a gauge made for the purpose similar to the B.W.
any other standard method? A few practical
would be esteemed.—A. D. W.

[10352.]—**Modelling.**—I should like to know of
good manual on modelling in clay, as applicab
carved ornament. So many carvers in provincial t
either cannot or will not understand a drawing, it is
heartening to see one's designs murdered.—A. D. W

[10353.]—**The Proper Fall.**—What is the "p
fall" (so often specified by the authorities in the
laws) for drains? Also the minimum which shou
allowed under certain conditions.—Dreyheller.

[10354.]—**Steps to Chancel and Altar.**—
many steps should the chancel be raised above the
and how many should be placed in the sacrarium?
there any reasons?—Novice.

[10355.]—**Reducing Bearing of Beam.**—A
12ft. long carries a weight of 15cwt. distributed ov
length. If I insert a pillar 4ft. from one end, how
more will the beam carry safely, assuming that it
carries its full weight?—B. S. K.

[10356.]—**Breaking Weight.**—What weight
break a yellow pine beam 20ft. long, 12in. deep, and
in width? and what is the formula used?—Perplexe

[10357.] — **Groins in Brickwork.**—Is there
practical guide to cutting groin bricks? Any inform
will oblige.—A Pupil.

[10358.]—**Brick Column.**—Will any one give a
for a round column of brickwork 12in. in diameter, a
ing the working of the bond?—H. H.

[10359.] — **Intercepting Chamber.** — Will
sanitary reader say which is the best position to plac
intercepting chamber in drainage of a street-ho
I propose putting one in the area in front. Also, w
form of intercepting trap should be used? There are
so many, each claiming some merit of its own.—Y
Architect.

[10360.]—**Length of Churches.**—Which is
posed to be the shortest church in England—I mea
reference to width—and which is the longest? Any
formation will be useful to—Ecclesias.

[10361.]—**Tobin's Tubes.**—What causes the inte
air to ascend a vertical or Tobin's tube? Is it on acc
of the higher temperature of the internal air or
motion in the external air and the absence of motio
the internal air?—C.

REPLIES.

[10323.]—**Posts of Wood, Strength of.**—I
not Spon's Pocket-book, and consequently do not k
his formula. The formula given by Hurst is Gord
applied to wood, and it suits columns of any rati
length to diameter. The values 2½ and 3 tons for F
too high for large sections, as they are derived from s
selected specimens. At 2½ this formula gives a break
weight of 158 tons, and at 3 it gives 190 tons. Stoney
his valuable work on Strains, gives useful tables for
crushing strength of large pine timbers, with no spe
precautions as to bedding the ends, of which the foll
ing is one (Brereton's):—

Ratio of length to least breadth	10	15	20	25	30	35	40	45
Breaking weight in tons per square foot of section	120	118	115	100	90	84	80	77

He also gives the following:—Taking the force wh
would crush a cube as unity, the force required to brea
timber pillar with fixed ends, whose height is

12	times the thickness, would be	1	5/6
24	,, ,, ,,	1	2/3
36	,, ,, ,,	1	3/4
48	,, ,, ,,	1	1/6
60	,, ,, ,,	1	1/5
72	,, ,, ,,	1	1/4

—B. E.

30.]—**Rolled Iron Joists, &c.**—For rolled oists—

$$W = \frac{12 \times a\,d}{l}$$

Where W = uniformly distributed breaking load in tons.
a = area of flange, d = depth of joist } in inches.
l = span in feet.

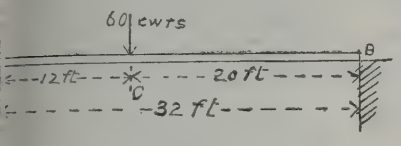
r of safety for dead load one fourth, when depth is nder $\frac{1}{12}$th span. For fir beams—

$$W = \frac{60\,b\,d^2}{l}$$

Where W = breaking weight in cwts. distributed
b = breadth of beam
d = depth } all in inches.
l = span

r of safety $\frac{1}{8}$ to $\frac{1}{10}$.—B. E.

38.]—**Beam.**—1½cwt. per foot run on 24ft. = 30cwt. t. distributed load = 60 cwt., concentrated load at a 12ft. from A—



$$\text{Reaction at A} = \frac{30 \times 20}{32} = \frac{75}{4} = 18\tfrac{3}{4}\text{cwt.}$$

$$\text{Reaction at B} = \frac{30 \times 12}{32} = \frac{45}{4} = 11\tfrac{1}{4}\text{cwt.}$$

r Reaction at B = $30 - 18\frac{3}{4}$ = $11\frac{1}{4}$cwt.
H. S.

38.]—**Beam.**—Reaction on loaded end $18\frac{3}{4}$cwt., on ded end $11\frac{1}{4}$cwt.—B. E.

39.]—**Centrolinead.**—"Perspective" will find llowing an accurate and easy method of setting the olinead:—Find the vanishing points in the usual to each of which draw on your paper two con- ng lines. Draw also the horizontal line. Fix two ion pins in *any* convenient position at the left and sides of the board, one above and one below the ontal line in each case. Now set one of the centro- ls for a *trial* with the short arms against their pins he long arm *coincident with the horizontal line;* move istrument up or down to a converging line, and see ner the angle made by the two short arms wants to ore acute or obtuse, and alter the angle accordingly, ng the long arm *against the horizontal line* during alteration. After one or two *trials*, the long arm e found to fit the two converging lines and also the ontal line. The instrument is then set correctly. In ilar manner set the other centrolinead.—J. Ezra ER.

44.]—**Coke-Breeze Concrete.**—Six inches is essarily thick for the coke breeze, and pitch is not sary, as the floor-boards can be nailed directly to the concrete. I suppose "L. S. N." refers to a d floor; if so, the method of laying is as follows:— p the floor space with chalk, lime, coal, or any dry sh to within 6in. of the finished floor level; on that n. of Portland concrete, and on that 2in. of coke- e concrete. To get this level, lay strips of wood wide and any convenient thickness on edge at rals of 6 or 8ft. before the coke-breeze is laid, to form ds. These strips need not be removed when the ete is laid; but, of course, they are not required for g the boards to, as the coke-breeze concrete holds better than any wood. The coke-breeze concrete d be mixed in the proportion of four parts to one of Portland cement; should be thoroughly mixed in state first, and then water gradually added until ixture is quite sloppy; this is necessary because the absorbs a great quantity of water.—C. F. M.

45.]—**Colouring Cement.**—Use Portland nt, and write to W. Grahmam, Yooll and Co., 24, ff Brae, Leith, for the colouring matter.—C. F. M.

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e parish church of Kilwinning, N.B., was re- ed on Friday after extensive alterations and ovements. Three memorial windows have been ed, all the work of Messrs. W. and J. J. , Glasgow.

n Sunday the Roman Catholic Bishop of lwsbury laid the foundation-stone of a new ch in Gatefield-street, Crewe. When com- d, the church will consist of chancel, side els, nave, aisles, baptistery, external porches, essionals, &c., with priests' and working sties connected with the presbytery by a ter. The total height to the top of the tower be 90ft. The cost will be about £4,500.

cairn called Harelaw, near Lochore Castle, shire, has been excavated during the past week dr. Constable, of Glencraig. Beneath a pile tones 30ft. high a stone cist was discovered, on the freestone cover being removed a ary urn was exposed to view, containing an bones and wood ashes. The cist was f by 18in., and 15in. in depth. It is composed ur flat and dressed stones set on edge, puddled e and below with clay. The urn, which is entire, is remarkably perfect in shape, formed ay, and is entirely covered outside by the l rude ornamentation. It is 5½in. in height, t. in circumference at its greatest girth, taper- o 9in. at its base.

WATER SUPPLY AND SANITARY MATTERS.

Moffat, N.B.—Since 1867 Moffat has been supplied by gravitation with water from a spring near Granton House, about three miles above the town. This supply is practically inexhaustible, as the spring yields 250,000 gallons per day. The town has hitherto been supplied by a 6in. pipe, but, owing to the increase of the number of houses which have been built at the higher levels within the burgh, there have been complaints of a want of constant supply during the forenoons. To obviate this difficulty, a new 6in. pipe has just been laid by Messrs. D. M'Donald and Son, Hawick, in accordance with plans prepared by Mr. T. O. Niven, C.E., Glasgow, at a cost of £2,390. The inaugural ceremony of turning on the additional supply took place at Granton on Saturday.

Thirlmere Water Supply for Manchester.—The members of the Manchester Corporation visited Lake Thirlmere on Friday, when Sir John Harwood, as chairman of the water committee, laid the foundation-stone of the embankment. The corporation, acting under the advice of the late Mr. J. F. La Trobe Bateman, obtained Parliamentary powers in 1879 to embank the lake, and since then the work has steadily progressed, under the direction of Mr. G. H. Hill, C.E. The drainage area to be appropriated is 11,000 acres, and the rainfall varies from 52in. to 137in. It was at first intended to raise the lake embankment 50ft., by which a storage of 8,130,686,693 gallons would be obtained, but upon further consideration the corporation determined for the present to only raise it 20ft. The aqueduct from Thirlmere to the reservoir at Prestwich is nearly 96 miles in length, consisting of tunnels of a total length of 13¾ miles, cut and cover 37¾ miles, and cast-iron piping 44¼ miles. The Parliamentary estimate for the works, inclusive of land, is, for the first instalment of 10,000,000 gallons per day, £1,740,437; and for the ultimate supply of 50,000,000 gallons per day, with land and interest of money, the cost will be upwards of four millions sterling. In 1884 the land arrangements were sufficiently advanced to enable the preparation of the works for letting to be proceeded with, and the first contract was let at the end of the year 1885. For the present only one line of pipes will be laid, but water will flow through at the rate of 10,000,000 gallons a day. Everything, however, in the nature of permanent works, such as tunnelling, will be for the full quantity of five lines of piping. The aqueduct is completed in many places, and there is no outward sign that the ground has been cut beyond the "manholes," which are placed at distances of a quarter of a mile apart. It is expected that Thirlmere water will be delivered at Manchester within two years from the present time.

STATUES, MEMORIALS, &c.

Brussels.—The new Waterloo Monument in Evére Cemetery was unveiled on Tuesday by the Duke of Cambridge. It represents a sarcophagus, 9 mètres in length and 4 mètres in width, in red Trèves sandstone, on which helmets, flags, and other emblems in bronze are disposed in masses. Around its surface three bronze lions in varied attitudes watch, and at the top of it Britannia, holding her casque in one hand and a lowered trident in the other, kneels at an altar. The vault below contains the coffins of sixteen officers who fell or died in consequence of wounds received in the battle. Two flights of stone steps lead down to the entrance of the vault, on both sides of which bronze shields bearing the names of the regiments which took part in the battle are fixed. Above the entrance an inscription explains the object of the monument. Around the monument are placed the tombstones originally erected in the old cemeteries where the officers found their first rest. Count Jacques de Lalaing designed and superintended the execution of the monument, and Mr. Geering was the architect.

A provisional committee was appointed at Wellington, Somersetshire, on Tuesday, to take steps for the restoration of the National Memorial to the Duke of Wellington. This lofty column, which stands on a spur of the Blackdown Hills, was struck by lightning some time ago. The repairs are estimated to cost £500.

In continuation of the work of restoration which is gradually being carried out at St. Germain's Church, Cornwall, the organ has recently been reconstructed and enlarged, at a cost of £265, by Messrs. Hele and Co., of Plymouth.

A solicitor applied at the Preston County Court on Tuesday, for the annulling of the bankruptcy of George Tinniswood, land surveyor, now of Stockport. The debts, he said, had been paid off, together with interest at the rate of 4 per cent. The official receiver, who was present, had paid off all in full, along with the 4 per cent. The judge granted the application.

Our Office Table.

Mr. Charles West Cope, retired B.A., the well-known painter of historical and domestic scenes, died on Thursday in last week at Bournemouth. The son of a painter, Mr. Cope was born in Leeds in 1811, and on coming to London studied under Mr. Sass, and joined the Academy School. His first picture, painted after a two years' stay in Italy, the "Holy Family," was purchased by Beckford. He exhibited at the Academy from 1833 till 1882, about 140 works appearing after his name in the catalogue. In 1844 he was elected an Associate of the Academy, becoming B.A. four years later, while from 1867 to 1874 he was Professor of Painting at Burlington House, and a trustee until his decease. In 1843 he entered in the Westminster Hall competition, and for his cartoon "First Trial by Jury" gained a £300 prize. In 1844 he took part in another competition for frescoes, and his success with the "Meeting of Jacob and Rachael" procured him a commission of one of six frescoes for the new House of Lords. Eight of the frescoes in the Peers' Corridor were executed by him. Mr. Cope was one of the original members of the Etching Club.

Some of the newly organised county councils appear to be inclined to treat the officials whom they have taken over from the magistrates in anything but a generous or liberal spirit. We recently commented on the conduct of the Suffolk Council in refusing a retiring allowance to the county surveyor, who had held office for a quarter of a century, and now hear of similar tactics in Montgomeryshire. The latter body recently determined not to permit their surveyor to acquire rights to a pension and retirement, and accordingly gave Mr. W. N. Swetenham, who has for many years held that appointment, notice that after the 1st of October next he will merely be elected at a salary of £300 a year, and with no claim to superannuation. At the meeting on Friday a letter was read from Mr. Swetenham, in which he stated: "As I question the right of the Council to dismiss me without blame (*ad vitam aut culpam*), I am unable either to accept or decline the offer made, as by so doing I should practically acknowledge the right of dismissal." A long discussion followed the reception of the letter, in which while high commendation was given to the mode in which Mr. Swetenham had discharged his duties, some irritation was expressed that he did not more humbly acknowledge that he is the servant of the Council. Eventually it was decided by a majority to declare the office of county surveyor vacant and to advertise for a successor.

With, as he says, the object of putting "the responsibility on the right shoulders," Archdeacon Sinclair writes that the painting of an arch of the choir of St. Paul's is being carried out by Messrs. Bodley and Garner, "by permission of the Decoration Committee." The painting, he adds, is purely experimental, and if the Decoration Committee do not approve of it, it will be scraped off again. He adds that Messrs. Bodley and Garner have arrived at the conclusion that Sir Christopher Wren intended the surface of the interior of St. Paul's to be painted. The Rev. Dr. Sparrow Simpson corrects this tentative view by adducing proofs demonstrating that not only did Wren "intend" that paint should be applied to the interior of the cathedral, but that, as a matter of fact, the walls were actually painted under his direction. Indeed, violent attacks were made on Wren for having had the walls painted at a cost of twelvepence per yard when the same man was doing similar work at Greenwich for eightpence, and alleged that Wren employed the man without the direction or consent of the Commissioners, and without making a contract. In the following year Wren's reply was published, to which was appended an affidavit by Joseph Thompson, son of Wm. Thompson, the painter, by whom the work was executed, averring that as some of the stones had to be covered several times over, the shilling a yard was not a sufficient price, and that the work was to be further valued at the conclusion of the job. Mr. Cavendish Bentinck argues that since, upon the advice of high architectural authorities, the Ecclesiastical Commissioners expended a large sum in removing the paint from the walls, it is absurd that Messrs. Bodley and Garner should be allowed to repaint the surfaces.

Mr. Frederick S. Waller has re-issued, in an enlarged form, his "Notes and Sketches" relating to Gloucester Cathedral. Excepting in the aisles of choir, the north aisle of nave, and that of the chapter-room, he shows that what appears of the abbey church of the 12th century is a mere shell. In the choir the walls have been actually pared down and an outer casing has been entirely removed; large pieces have been cut out of the piers for the introduction of Mediæval monuments; window heads have been removed and replaced, and the whole building was covered in the 14th century with appliqué work of mullions and tracery. Strange to say, although new walls, vaulting, and roofs are now carried on the old foundation, as well as the great central tower, scarcely a settlement of any kind can be seen in the building.

Amongst the appeals just decided by the Camberwell Assessment Committee is one of more than local interest, viz., whether an observatory, built in the grounds attached to a gentleman's residence for purposes of observation and scientific research, can be said to add to the annual value of the premises. Sir Henry Bessemer, at considerable cost, erected, not long since, an observatory in his grounds, and in due course the overseers assessed it at £100 gross value. Mr. W. H. Blanch, Assessment Surveyor, Ludgate-hill, who conducted the appeal on behalf of Sir Henry against the assessment of his property as a whole, objected particularly to the assessment placed upon the observatory, on the ground that, instead of adding to the annual value of the hereditament, the observatory had, in his opinion, reduced it. Overseers, Mr. Blanch contended, were too prone to assume that an expenditure of money must necessarily increase annual value; whereas it often, as in Sir Henry Bessemer's case, operated the other way. In the end the Assessment Committee, whilst not conceding all that was asked on behalf of the appellant, made a substantial reduction on the assessment.

The programme of the Technological Examinations for the year 1890-91 just issued by the Council of the City and Guilds of London Institute, shows several improvements on those of previous years. The distinction between the requirements for the ordinary and honours grades has been more carefully marked in each syllabus, and the lists of works of reference have been revised and brought up to date. We note that in future, in the case of architects who apply for examination in practical plumbing and who fail to present themselves, the entire fee will be retained by the Institute. The new session will commence in October next. The prize list for last session includes the following awards: — Brickwork and masonry: 1st in honours grade, £3 and silver medal, William H. H. Lord, Peterborough; 1st ordinary, £2 and silver medal, Joseph E. Fletcher, Sheffield; 2nd honours, £2 and silver medal, Victor T. Jones, Central Institution, Kensington; 2nd ordinary, £2 and bronze medal, Archibald C. D. Steele, Central Institution, Kensington; 3rd ordinary, £1 and bronze medal, David D. Calder, Lochee, N.B. Carpentry and Joinery: 1st with honours, £5 and silver medal, Daniel Bryant, L. and S.W. Mechanics' Institute, Vauxhall, S.W.; 1st ordinary, £3 and silver medal, Charles B. McElwee, Kirkcaldy; 2nd honours, £4 and silver medal, Charles W. D. Boxall, Central Institution, Kensington; 2nd ordinary, £2 and bronze medal, Martin Thomas, Coatbridge; 3rd ordinary, £1 and bronze medal, Frederick J. Wass, Heriot; Watt College, Edinburgh. Plumbers' Work: 1st ordinary, £2 and silver medal, Albert E. King, Merchant Venturers' School, Bristol; 2nd ordinary, £2 and bronze medal, William McAlpin, Glasgow Technical College; 3rd honours, bronze medal, Alexander Knowles, Aberdeen; 3rd ordinary, £1 and bronze medal, John W. Chapman, Plymouth; 4th ordinary, bronze medal, Alexander R. Will, Aberdeen; 5th ordinary, bronze medal, John A. Shervill, Polytechnic Institution, London.

Mr. T. J. Moss Flower is showing this week, at Stand 34 at the Health Exhibition held at Brighton in connection with the Sanitary Institute, a cheap and handy little adjustable gradient indicator, which should be in the possession of every architect, civil and sanitary engineer, builder, sanitary inspector, or clerk of works. By its aid drains can be accurately laid to any required fall by simply applying the bed of the level to the upper surface of the drain-pipe or straight edge. It can also be used as an ordinary level, is only 9in. long, simple in construction, and requires little or no experience to use it. It will repay its very moderate cost many times over to any purchaser within the first six months.

Mr. D. T. Bostel has, as usual, one of the best exhibits at the Health Exhibition at Brighton this week. He shows his new "Brighton Excelsior No. 2" closet, which is an ingenious development of its well-known predecessor, having all its advantages and one or two decided and desirable improvements. Mr. Bostel also exhibits his cisterns, which we not long since noticed, and a new Ball Tap, about which we shall say more presently, and which is certainly novel in idea, and we really think obviates the many difficulties which somehow seem inseparable from every successive "patent" tap. There is also a capital collection of plumbers' brass fittings, belonging to the Meyer-Sniffen Manufacturing Company, of New York, which some of our sanitary appliance manufacturers may profitably study, though, of course, many of them will remind us that people won't pay the prices here that the sanitary plumber can ask in America.

On Saturday (August 16) the employés of Messrs. Thos. Gregory and Co., of Station Works, Clapham Junction, held their annual beanfeast at Portsmouth. The men left Clapham Junction, in special carriages, by the South-Western Railway at 6.45 a.m., arriving safely at Portsmouth Harbour about 9 o'clock. A substantial dinner was provided at Maybour's Restaurant for 12 o'clock, at which Mr. Thomas Gregory took the chair, supported by his partner, Mr. G. C. Hudson, and the committee of management. After the usual loyal toasts had been duly honoured, Mr. Rouse, shop foreman, proposed "The Prosperity of the Firm," alluding to the large quantity of work executed during the last quarter of a century, which he described as sufficient for a moderate-sized country. The toast was heartily received with musical honours. In responding, Mr. Gregory thanked the men for the good feeling expressed, and congratulated the building trade generally on the settled and peaceful state of the trade in this age of agitations and strikes. The toast of "The Foreman" was given by Mr. A. J. Farmer, representative of the clerical staff, and responded to by Mr. J. Newton (22 years with the firm), who advised the men to study themselves by studying others, and alluded to the good-feeling that always existed in the firm, several of those present having been over 20 years with the firm. Mr. Bowman proposed a toast to those who had so well managed the excursion, and Mr. Down, the Secretary, appropriately responded. Mr. Forsey, Mr. Easter, Mr. Dorey, and Mr. Davis also spoke, and after one or two well-delivered songs, the majority repaired to the boat for Ryde, Isle of Wight, accompanied by genial weather, returning from Portsmouth at 7 o'clock, after an interesting and social outing.

CHIPS.

During the past week a deputation from the City Corporation of London have visited Manchester, Edinburgh, and Glasgow, for the purpose of inquiring into the water supplies of these cities.

Mr. W. F. Bird has been appointed surveyor to the local board of Midsomer, Notts. Over 100 candidates sent in testimonials, etc., though the salary offered is only £100 a year.

The Commissioners of the Clerkenwell Free Public Library have decided to throw open the new section of the institution, the lending and reference library, to be opened a fortnight hence, on Sundays from three to nine p.m.

Holloway's Ointment.—Glandular swellings in the throat, neuralgia, tic doloreux, rheumatism, gout, lumbago, and other diseases affecting the glands, muscles, and nerves of sensation are permanently eradicated by this healing anti-febrile and soothing preparation. It is also a perfect remedy for all skin diseases, and every kind of superficial inflammation.

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TENDERS.

*** Correspondents would in all cases oblige by giv the addresses of the parties tendering—at any rate, of accepted tender: it adds to the value of the informatio

Barry.—For widening the railway bridge at East Ba Mr. J. Robinson, C.E., engineer:—
Strachan, J., and Co., Cardiff (accepted).

Barry Dock.—For the construction of a wrought-i bridge of nine openings, each 24ft. span, over the Ba Railway Co.'s line at Barry Island. Mr. J. Robins C.E., engineer:—
Strachan, J., and Co., Cardiff (accepted).

Bedminste, Bristol.—For the erection of a Primit Methodist chapel, near Bedminster Down:—
Elmes, G., Bedminster (accepted).

Blackheath.—For rebuilding and fitting up the Geo and Dragon p.h., and house adjoining, at Blackheath H S.E., for Mr. W. Prangnell. Mr. T. H. Smith, 17 and Basinghall-street, E.C., architect. Quantities by Mr Taperell:—

Williams, H. J.	£6,580 0 0
Smith, W.	6,183 0 0
Holliday and Greenwood	6,079 0 0
Patman and Fotheringham ...	6,064 0 0
Jerrard, S. J.	6,034 0 0
Kearley, C. F.	5,670 0 0
Holloway, H. L.	5,569 0 0
Allen and Sons	5,560 0 0

Bow.—For altering and adapting No. 199, Bow-ro E., for Mrs. F. Davies. Mr. J. W. Dunford, 100c, Qu Victoria-street, E.C., architect:—
Coxhead, F. J., Leytonstone (accepted) ... £280

Brackley, Northants.—For works of drainage at workhouse, for the board of guardians. Mr. R. Russel, architect and surveyor:—

Claridge and Bloxham	£498 0 0
Jarvis, E.	475 0 0
Harding, W. J.	445 0 0
Wooston, A., Brackley	400 0 0
Jenkins, W., and Son, Leamington*	320 0 0

* Accepted.
Rest of Banbury.

Camberwell.—For improvements to laundry, sto &c., for the Camberwell Infirmary. Mr. R. P. Whello 45, Finsbury-pavement, London, architect:—

Garner, A.	£369 15 0
Evans, R.	369 0 0
Young and Lonsdale	365 0 0
Goad, W. V.	289 0 0
Treweeke, F. P. (accepted)	288 0 0

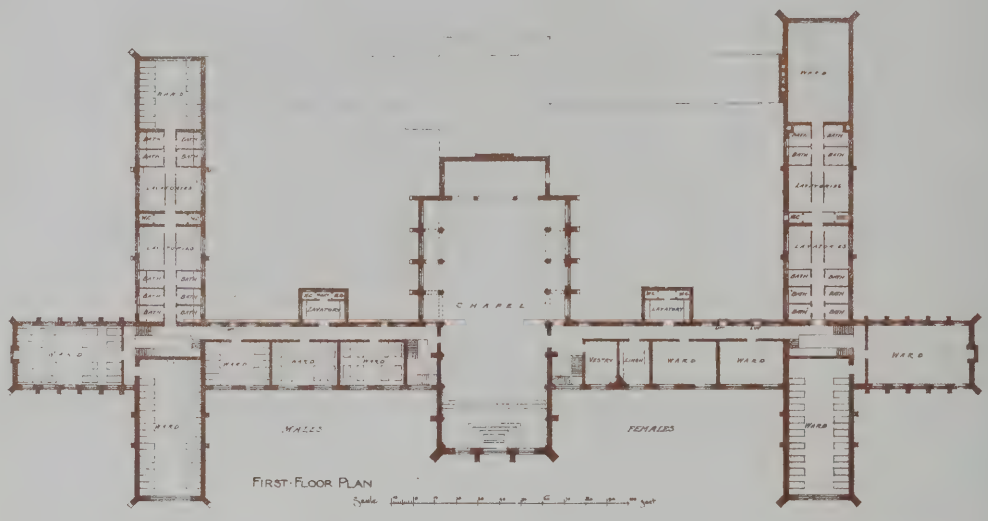
Cheshunt.—For the erection of engine-house chimney-shaft, for the Cheshunt Local Board of Hea Mr. T. Bennett, C.E., engineer:—

Kirk and Randall	£1,961 0 0
Hunt	1,950 0 0
Holliday and Greenwood	1,930 0 0
Dickson, J.	1,929 0 0
Killby and Gayford	1,630 0 0
Neil, W.	1,600 0 0
Jackson, J., Enfield (accepted) ...	1,475 0 0
Hampton	1,433 0 0
Pavey	1,427 0 0

CONVAL

LITTLES

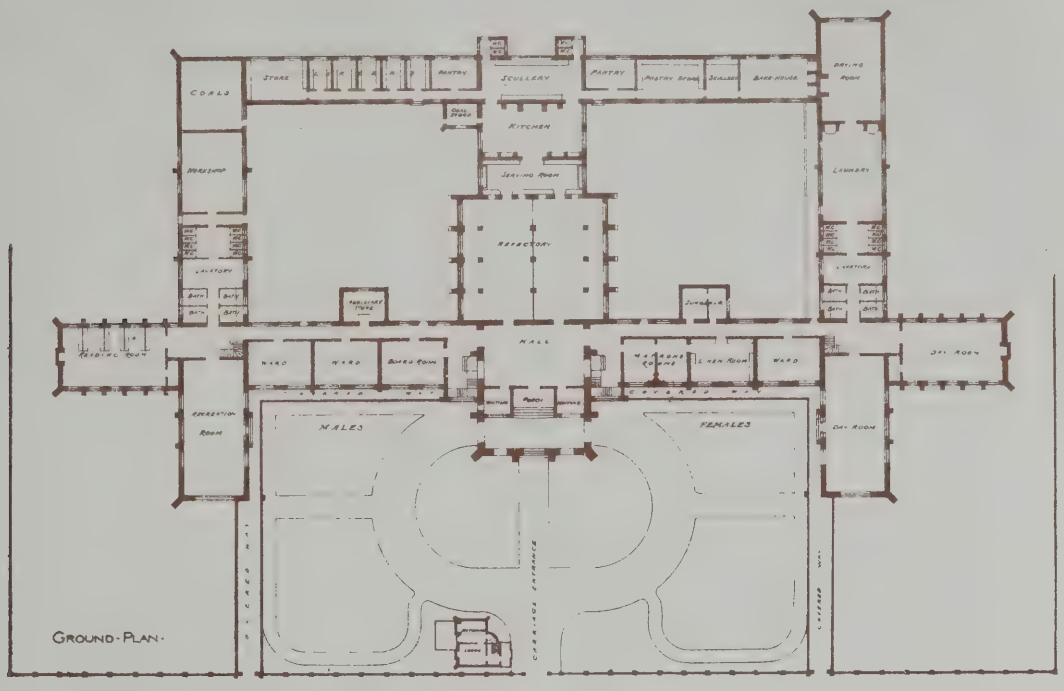
PERCY G.S

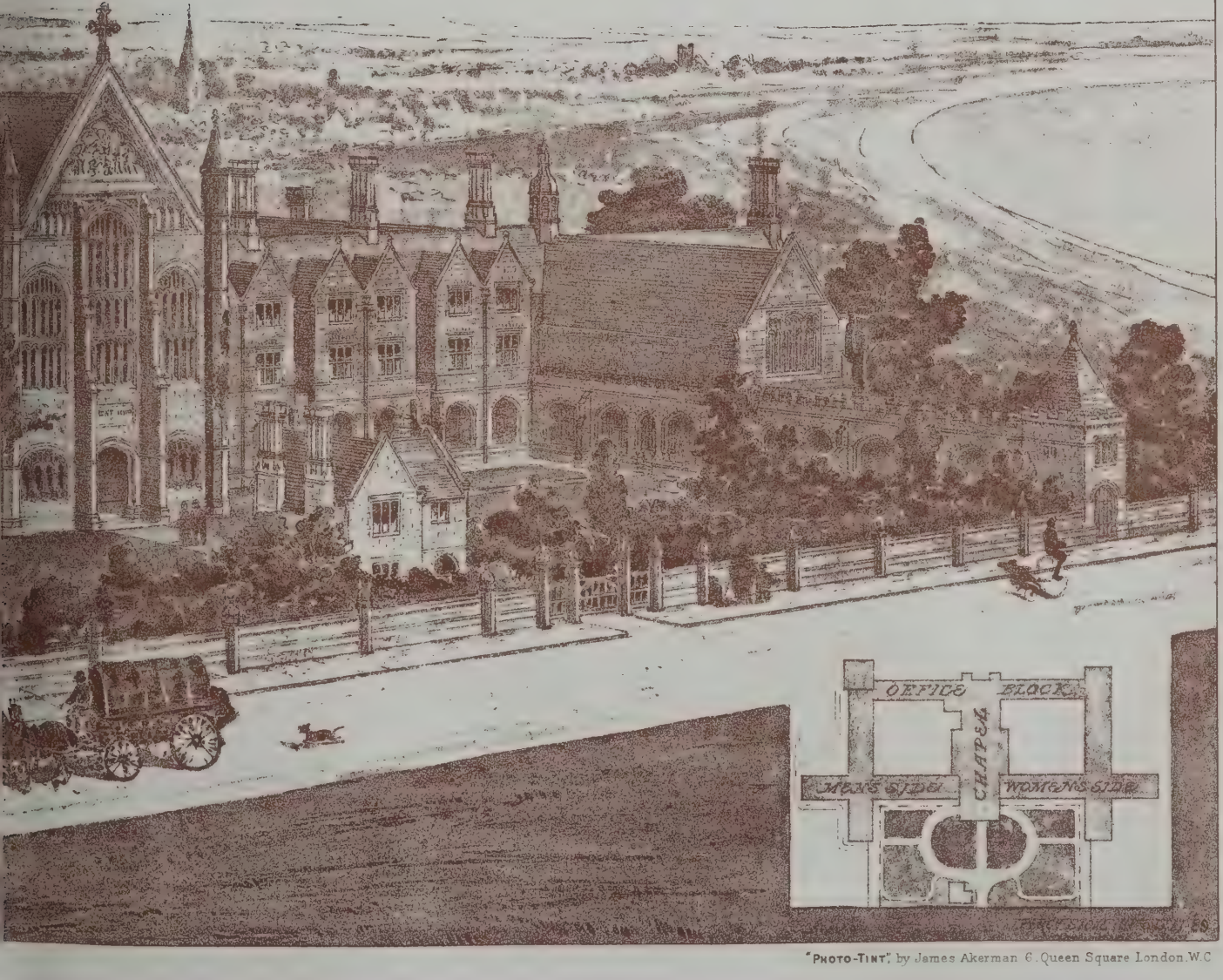

CHAPEL
WARD
WARD
WARD

HOME.

N-SEA.

A. ARCHT.



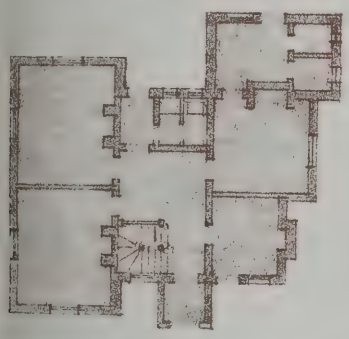


"PHOTO-TINT," by James Akerman 6, Queen Square London, W.C




R. Phene Spiers.

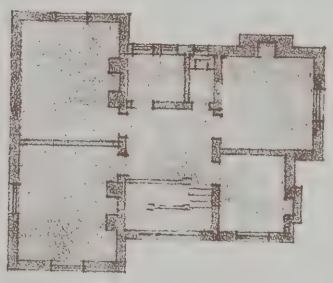




House near Guildford, Surrey.

Costing £750

W. H. Seth-Smith, Arch^t
46 Lincoln's Inn Fields, W.C.



Ground Floor.

First Floor.



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Clegg Hall near Rochdale

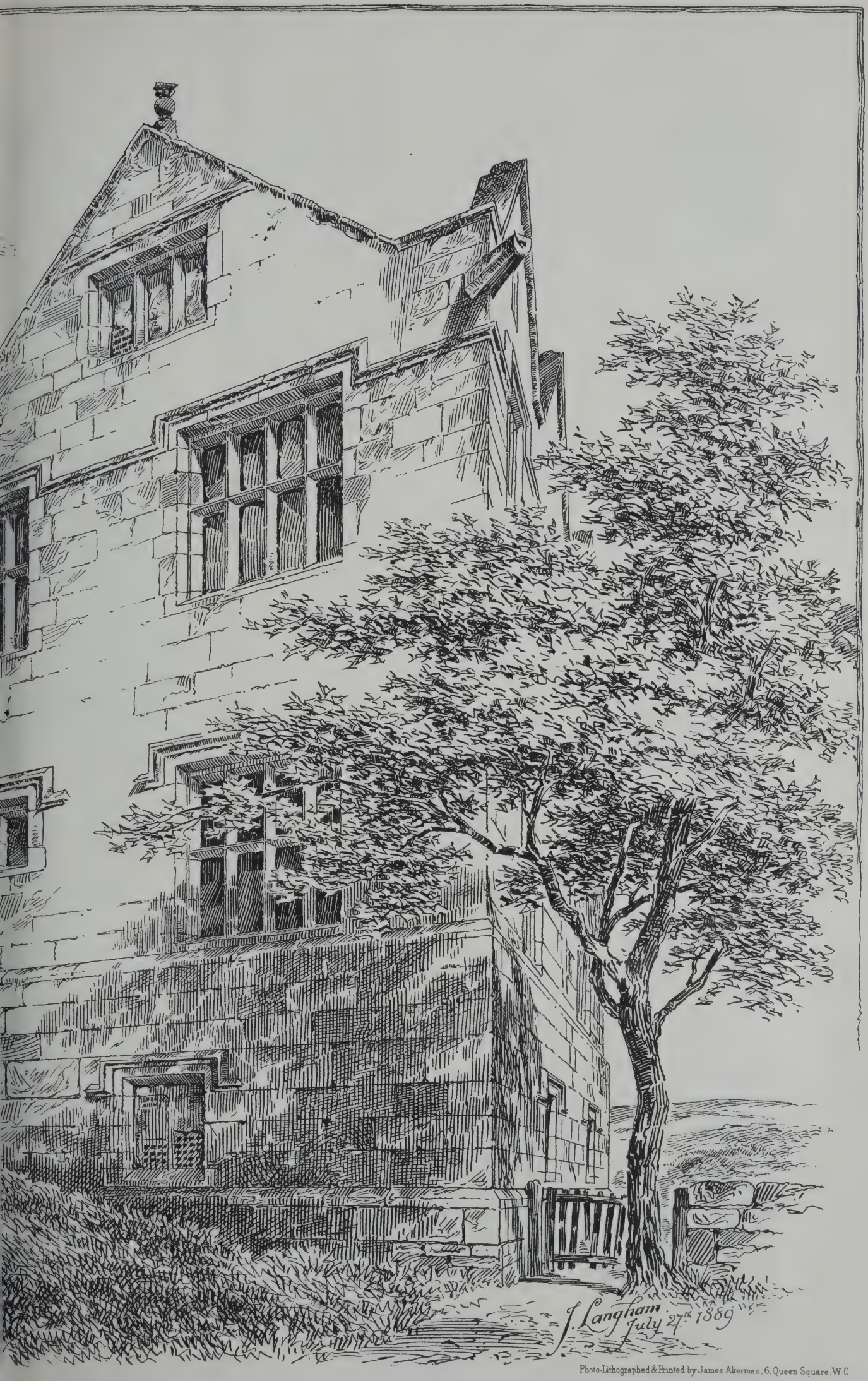


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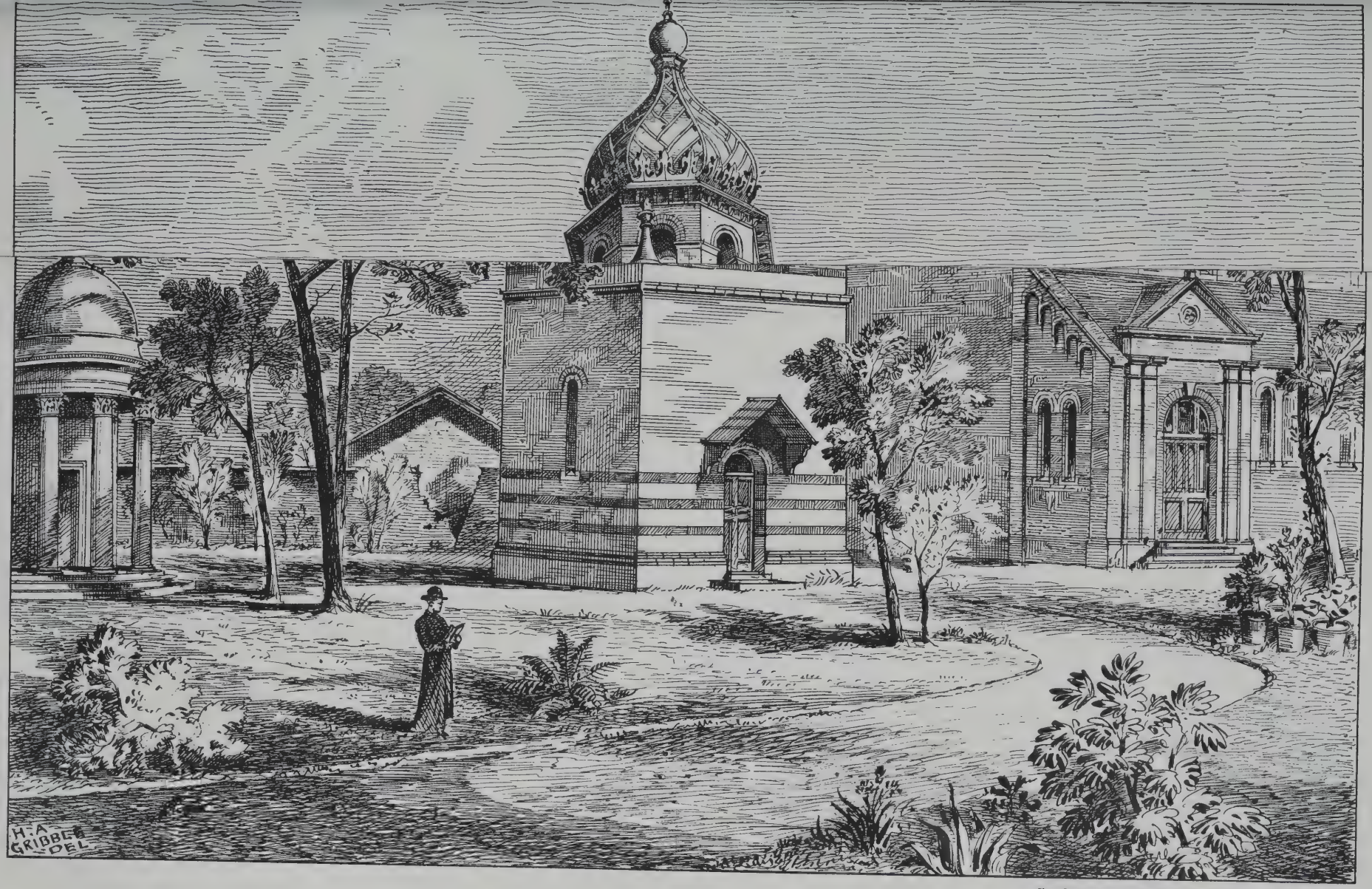


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THE · NEW · CAMPANILE · TO · THE · CHURCH · OF · THE · HOLY · NAME · POONA · INDIA ·

HERBERT · A · CRIBBLE · A·R·I·B·A · ARCHITECT ·

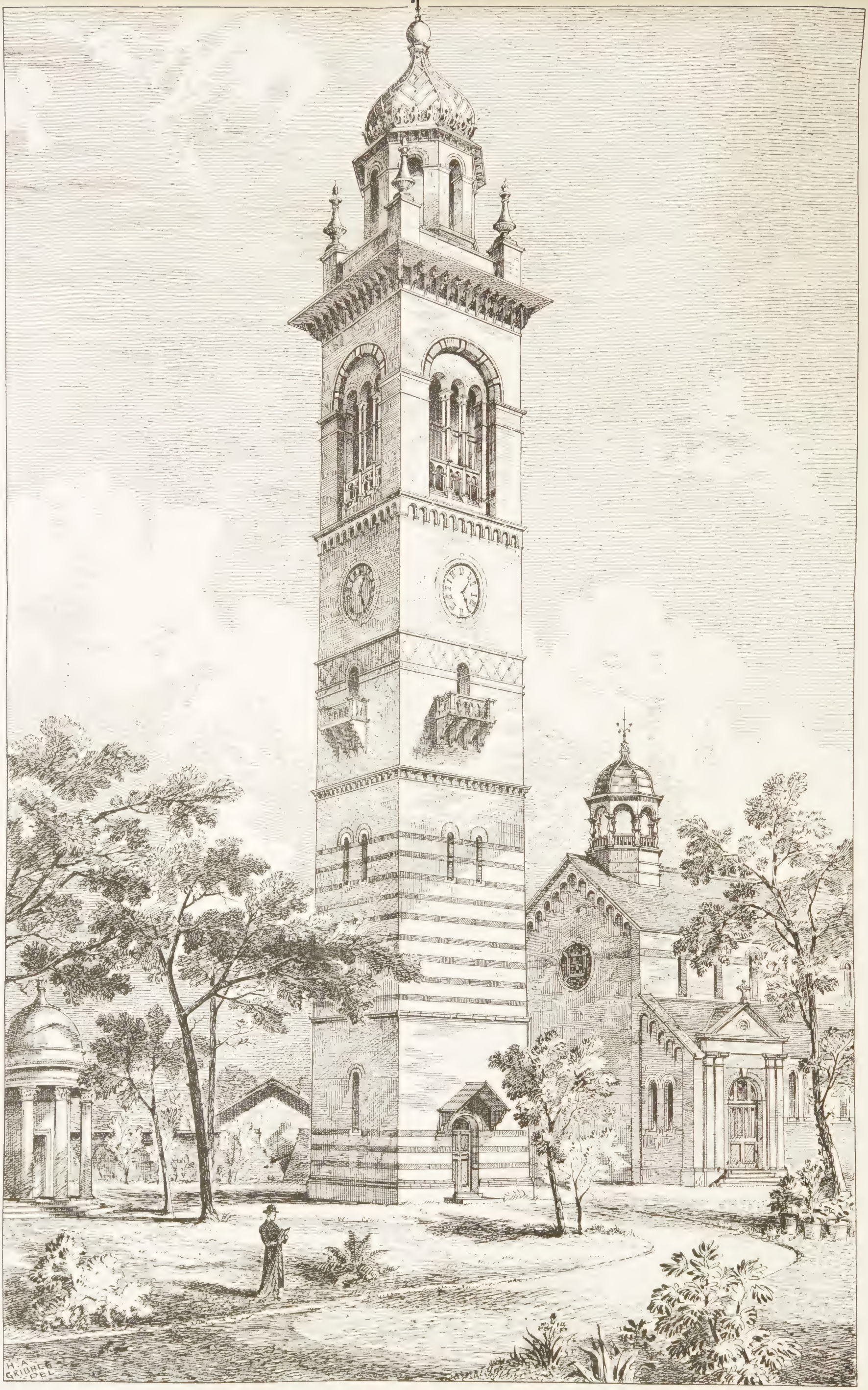


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THE·NEW·CAMPANILE TO·THE·CHURCH·OF·THE·HOLY·NAME·POONA·INDIA·

HERBERT·A·CRIBBLE·ARIBA·ARCHITECT·

IE BUILDING NEWS
ND ENGINEERING JOURNAL.
VOL. LIX.—No. 1861.
FRIDAY, SEPTEMBER 5, 1890.

WALL DECORATION.

IE importance of wall decoration has never been questioned. The chief ments that have been used against it ounded on the injurious action of our te on the materials, more particularly regard to external decoration; also the of a certain proportion of restful ce between the architectural features details. These arguments are strong, h they have in no measure lessened the of surface decoration when applied to ns of our buildings which require ment or relief, such, for example, as pper portion of façades, the friezes of edifices—external and internal, panels, pilaster spaces, and other like parts. now there is a strong inclination to aterials that are cheap and attrac- without inquiring whether there is ome more artistic mode of dealing these surfaces. Cannot the artist be ht to the wall himself to design or a subject or a pattern, or cannot the ect suggest what should be done, and are that his ideas are carried out by the orkman? These are questions which not been satisfactorily answered, and ot be, so long as the architect has no in decoration, and so long as the nd art craftsman are so dependent on employers—those who contract and arge profits as contracting middlemen. and art theorists are constantly ning about the poverty of mural decora- England—how little we encourage the ishments of our public buildings by artists; but the reason is that easel g is so lucrative as a profession, that ainting has almost ceased to become and has now been handed over to ors and stencillers. Only when the ct and painter will agree to value their ces and work in unison, as they once ll wall decoration regain the position rt it then enjoyed.

ces admit of various kinds of decora- Brick diapers, terracotta slabs, tiles ich designs have been drawn or , incised ornament, marble veneer- saics, sgraffito, and other plaster or decoration, are among the methods . To attempt to treat of all of these e superfluous; our aim is rather to what directions artistic wall decora- be made to play a valuable part in hitecture. Two forms of wall en- t have become popular of late: the brick ornament and painted tilework. ner has been employed to relieve the gables, to fill in between timbered s; the latter for lobbies and interior A slight relief or broken surface is by the brick diaper in which the a repeat of a diaper pattern cast or on each square, though sometimes gn is extended to four or several we see in panels introduced with nal designs of a floral cha- brick buildings. This idea of composed of several tiles or might be developed. We have not many successful attempts to pro- chitectural ornamentation in this in the shape of panels, bands, and which each square or slab might action of the whole design.

ese purposes terracotta has largely place of bricks; because the whole n be produced in one or a few slabs. are restrictions: it cannot aim at the delicacy and precision of a bas-relief in stone; there are limits to the size of the slabs, and imperfections due to the manufacture and burning. The principles of bas-relief apply to this kind of decoration—namely, that it is an incorporative part of architecture, the latter furnishing the framework. The things represented should be those which are palpable and can be at once perceived—the effects of a picture must be avoided. Bas-relief on buildings should represent to the public gaze facts and events, historical, religious, allegorical, industrial; the attributes and accessories should be conceived in a symbolical manner. Other laws are necessary: the modeller should present only clearly-comprehended figures or images; that is, the figures or groups should appear distinct from the ground; he should obey the law of preserving two or three planes of projection; but the fewer the planes the better the effect will be. These principles have been well enforced by the eminent French sculptor, M. Guillaume, who says that experience has shown it is wise not to go beyond two or three planes superposed. To prevent confusion also, he says, "the different parts of the subject must have a general projection which will render it in some sort independent of the elements surrounding it or touching it." Different positions in a building require different heights of relief: the nearer to the eye the lower the relief. These and other necessary rules apply with equal force to terracotta relief, though they are often disregarded. Again, bas-relief in any material must be distinguished from painting. It must not seek to imitate painting such as the effects of perspective, an error we have often seen committed. Plain colouring of bas-relief has the sanction of ancient precedent; but it is one of those things which requires the utmost moderation and judgment. The colours should be broad and simple, perhaps only a flat tint over the figures, or a dark background to throw them out in their natural burnt tint.

Because ancient sculpture in Greece and Assyria have been found coloured, polychromists have concluded that we ought to do the same, and argue that our public buildings should be glowing with colour, not seeing that the climate and sunlight make all the difference, and that while intensity of colour modifies and subdues the strong light, and is necessary under Southern skies, coloured buildings would absorb light and have a contrary effect in this country. Colour has been found in this broad, flat manner on the grounds of tympana and metopes, blue or red; the figures stood out upon such a background, the emblems, drapery, and ornaments being strongly marked with colour or gilding. The ground of the Panathenaic frieze was blue, the figures relieved by gold and colours, the architecture beneath being left plain. Modelled or sculptured bas-relief surfaces, are certainly the highest kind of architectural decoration. If we colour them, we should do so on the principles which guided the Greek artists in their treatment of architectural sculpture. As Gambier Parry pointed out, colour made a part of a complex effect, whereas independent statuary was clear of all obligation, and its colouring had relation to itself, and, therefore, a few touches of colour on drapery and accessories, tenderly introduced, and with the object simply of more clearly emphasising the figure, sufficed. The Wedgwood idea of colouring relief is that which appears to us to be the right one for our external surfaces, as in friezes and panels. A future for this kind of decoration appears evident; hitherto architects have been handicapped by mechanical reproductions, imperfect manufacture, and the natural distaste to have their designs repeated in all kinds of places and for all sorts of purposes. Improvements in the manufacture of terracotta are removing these objections, and are leading to more artistic productions in which the hand of the artist or sculptor is more directly concerned than it is now by the intervention of moulds.

Another question in connection with decoration of this sort is, Where should it be placed? All recognise the value of friezes and panels so embellished, in which there are broad surfaces. Thus panels of terracotta, or carving in bas-relief, look well below the entablature of a main order, between the columns and above the principal windows, or as panels in an attic. In buildings in the style of the Empire, we find this mode of decoration resorted to. The panelled reliefs of the Arc de l'Etoile, the enriched friezes and attics of many of our own classical Italian buildings, illustrate the beauty and refined elegance of surface decoration so introduced, the only condition being that a sufficient breadth of plain wall surface should be preserved, or else a frittered effect is the result. According to one of Ruskin's dicta, wherever the eye can rest there decorate; the panelled surfaces are the proper ones for embellishment, though the principle appears to conflict with those examples where the decoration is employed on the least restful features, as those of arches and pilasters. We find, for instance, many beautiful buildings in the style of François Premier in which the surface ornament is applied to the pilasters in the form of panels, and in more elaborate Renaissance buildings arabesques are introduced in panels of pilasters and arches with elaborate carving and with soffits enriched. The ornament is confined to pilasters, arches, friezes of entablatures and window dressings, while the retiring wall surfaces are left quite plain. The relief on these parts are, however, generally low, and the angles and margins of the panels are rigid and emphasised, and express the active functions of the pilaster or arch. The principal condition is fulfilled, namely, that the ornament is confined to the smaller surfaces, while the plain wall surface becomes a rest to the eye. Ornamental terracotta is available for both these modes of decoration. It can be used as slabs on the wall, or in pilasters, columns, arches and dressings round doors and windows. But decoration cannot be used in both places at the same time. The effect of wall and feature decoration would be to render both ineffective—to destroy each other. Some architects do not appear to think so; they employ both, and the result is that the value of the decoration is lost because there is no contrast or relief.

A question of almost equal importance is the relative position to be given to architectural or conventional ornament and figure or pictorial subjects. Here also we find a variety of practice. The right principle is to decorate structural parts with forms which are akin and have a cognate character, for which reason the architectural kinds of ornament such as diapering, geometrical figures, and continuous enrichments like the fret, egg-and-tongue, and scroll appear to be best adapted. These latter are common in friezes and horizontal bands, while vertical parts like piers and pilasters should have forms of rectilinear or curvilinear variety. The Raphaelesque decoration or arabesques, composed largely of foliage and griffins, are more adapted for the panels of pilasters and piers. In the interior of buildings this imaginative and capricous kind of ornament can be used for wall and pilaster panels; but it is less suitable for the exterior of buildings. Then we come to the non-structural parts, such as friezes and panels in walls, here figure sculpture and relief appear more appropriate. The more elaborate and highly-finished works of this class should be placed where they can be easily seen and appreciated, leaving to

the upper portions of façades the bolder designs, in which the figures are merely outlined in single or clearly discerned groups. Referring to effective decorations of this sort, we may allude to a new kind of sgraffito decoration introduced by Messrs. Doulton as a frieze in their recently-erected art-pottery building. Instead of the pattern being scratched through a layer of light plaster upon a darker layer, as seen in the sgraffito decoration at the back of the South Kensington Museum; the figures in the frieze are on tiles of clay, incised by a small tool of any width, and filled in with "slip" of a dark colour. The tiles can be made to follow these lines in their jointing, or be of the usual square shape. The figures are buff in a darker shade. The artist draws with his own hand the design on the clay. Great breadth and clearness of outline are the result of this process. By another method the design can be outlined by a raised line or rib forming the pattern, which can then be filled with any colour. Sgraffito and mosaic are two kinds of decoration especially suitable for the purpose. Our public buildings, our board schools, technical schools, museums, and libraries are admirable structures for this broader kind of decoration. Why should not their walls and friezes tell the story of the arts in simple language, instruct the wayfarer by allegories, and teach moral precepts on frieze or panel?

METROPOLITAN BUILDING LEGISLATION.

THE important building sections which have been introduced into the new Act just obtained by the London County Council have been casually referred to by us. One of the most useful sections is a Tribunal of Appeal from the decision of the superintending architect upon questions relating to lines of frontage. The new tribunal is to be a court of three of co-equal authority. Two of the three members are to be nominated by the councils of the professional bodies, so as to obtain experts, the third to be a nominee of the County Council. We have had painful evidence of the need of such a court, in the unexplained way decisions have been given and buildings erected in violation of the plain meaning of the provisions of the Act. In one case a shop has been allowed to come forward before other recently-erected buildings, and in another we find a public structure made to set back. More extended powers are required for the Court of Appeal than have been given it. Why should not every technical question affecting building in the Metropolis be decided by it?

One of the most important sections of the Act has reference to the maximum cubical capacity of buildings for the purpose of trade or manufacture. The old provision of 216,000 cubic feet as a maximum was, to our mind, quite sufficient; the proposed maximum limit of 450,000 is undoubtedly fraught with danger, as we have pointed out. Capt. Shaw and others have pointed out the greater risks involved in the extension of cubical space. It means warehouses of more than double the former capacity, in some cases filled with inflammable goods, to cope with which, in case of a fire breaking out and obtaining the mastery over the entire area, means a large extension of fire-extinguishing resources. The Council have, it is true, proposed certain conditions or restrictions which must be complied with before their consent to erect buildings of this size without party-walls. Before consent can be granted the Council must be satisfied "upon the report of the superintending architect and of the chief officer of the Fire Brigade that the additional dimensions are necessary for the purpose of the trade or manufacture carried on, and that proper arrangements have been, or will be, made and maintained for lessening, as far as reasonably practicable, danger by fire." In no case shall consent be given in the case of buildings exceeding 60ft. in height, and it is further provided that consent shall continue in force only during the time the premises are *bonâ fide* used for the purpose of trade in respect of which it was granted. These reservations are very necessary accompaniments to the clause; but even they do not very distinctly assert what kind of "proper arrangements" are to be made in the new buildings to reduce the risk of fire. These should be not only preventive, but specify means of extinguishing. Solid and well-constructed floors, with encased iron girders and columns, properly constructed lifts or hoists, with fire-resisting doors at each level, safety lighting and heating regulations, would be included in the former; while amongst the latter automatic extinguishers and sprinklers, tanks in convenient positions, hydrants on every floor, and other fire-extinguishing appliances ought to be required. The danger is that the phrase above quoted will permit a rather low standard of requirements. The only absolute restriction is that limiting the height to 60ft.—a very necessary condition. A few more structural rules might have been made absolute, having reference to the construction of roofs, floors, and lifts, the arrangements for the supply of water to each floor, fire doors, and staircases. These are matters which, if left to the option of the authorities, might be seriously compromised.

The section (33) dealing with buildings abutting on more than one street, or on corner sites, is one that very materially concerns the owners of corner sites. The original framing of the clause would have prevented an owner of a corner house which had been pulled down or destroyed by fire from rebuilding it without a large sacrifice of land, for it would have compelled him to set back his building to the line of the buildings in the side street; the section, in fact, says that no corner building fronting to one road shall have its side erected in advance of the general line of building in the side street, provided that such line is not more than 50ft. from the side road, without the consent of the County Council, who may impose terms and conditions. Had such a clause been in force a few years earlier, we should have been spared the disgraceful encroachment of shops on corner sites in many of our thoroughfares, which sites were formerly occupied by houses set back within grounds of their own. The section, as it is passed, applies only to a building "other than on the site of a building, or on land held with a building existing at the time of the passing of the Act," or on land laid out at that time, which practically limits the operation of the rules. The objections urged against the original wording, on the ground that it would compel an individual to sacrifice his land for the public convenience without compensation, would render it impossible to make any improvement in public thoroughfares. Compensation, no doubt, should be given to an owner who gives up his land for public improvements, but it should be based on a moderate schedule. This section, as it stands, is not wholly satisfactory or clear in phraseology, though it is a step in the right direction. We should like to see—in the suburbs, at least—corner sites, now partially occupied by buildings, protected from greedy speculators—that is to say, that the grounds outside the house, and bordering it on both fronts, be kept open or preserved from building. The County Council have power to prevent the old boundaries being built up to by determining the lines of frontage on both sides, and by throwing open to the public road so much of the site as may be required to widen the existing roads. This power they have by the new section secured, and it is to be hoped we shall see no more of those miserable corner turnings with shops brought out to the full boundary of the old site.

The question of the height of new buildings has been now settled. A new structure not forming part of a continuous block, and not being a rebuilding of a structure above 90ft., is fixed at that height, exclusive of two stories in the roof, gables, and ornamental towers. Higher buildings may be erected by consent, and the right of appeal by those who object to the ruling of the County Council is given to the new tribunal. We are very doubtful as to the wisdom of allowing so high an elevation. Practically, the height of 90ft. exclusive of roof means the erection of buildings of over 100ft. in height, and a proportionate degree of darkening and obscuration of light. Capt. Shaw's evidence in committee has been set aside, probably because the framers of the section saw that if they stated a less height builders and speculators would raise objections, and finally obtain what they wanted.

THE SOCIETY OF ARCHITECTS' SUMMER EXCURSION.—II.

FAVOURED with fair weather, the members of the Society of Architects found the latter part of their week's excursion even more enjoyable than the first few days had been. On Thursday morning an early start was made, and a train taken to Sevenoaks, where, after a short delay, they were met by three tumble-down brakes and horses to match. Possibly it was the pre-Adamite appearance of these vehicles which led to the strange reception which the party met with at Knole House. After paying—somewhat heavily—for admission, they were ushered by a stableman into the banqueting-hall, and left to admire the beauties (?) of the carved screen to its musicians' gallery for some time, before the pleasant Scotch housekeeper appeared to conduct them over the building. Thus the first impression of Knole was bad, and it was not greatly improved when sketching within the house was forbidden. Still, it was impossible not to admire the great, rambling place, with its huge courtyards, its gabled fronts, its chimney-pieces, and its plastered ceilings—the finest in Kent, if not in England—all speaking of the prosperous, stirring times of the 16th century. The extensive picture-galleries, too, contain works of art of great value; but unfortunately the masterpieces, though many, are far outnumbered by indifferent works, mostly copies. But the most noticeable feature is the massive repoussé silver-work of all descriptions. James I.'s bedroom—a room which, it is said, cost, even in his days, £20,000 to furnish.

After leaving Knole, the drive was over well-wooded slopes, through scenery of a rich but different description from that of the previous day, until the escarpment of the hills was reached. Here Mr. B. Harrison, the county grocer, who is one of the leading authorities upon flint implements, took the party in charge and led them at a rapid pace round the entrenchments of the ancient British camp of Oldbury. Its contents, he said, were no less than 125 acres, while its outline was essentially different from that of any Roman camp, following the natural outline of the hill. The only entrance was up a steep slope, made well-nigh impregnable by being guarded by a projecting spur of the escarpment, and close to this Mr. Harrison pointed out a cave which bore evidence of having been inhabited in the Early Stone Age—the Palæolithic period—when the inhabitants of these islands found their only shelter in the rocks.

A little further scramble and the inn was reached, and lunch partaken of. Then the party scattered, the sketching contingent gathering round the little "Town House" at Ightham—a half-timbered building of the latter part of the 15th century, unrestored, the cusped bargeboards hanging together nobody knows how, and the brick chimney, on its stone base and with its crenellated capping, asking for a prop in its old age. The house cannot stand much longer as it is, and all lovers of the picturesque who care to study the abodes of their forefathers should visit it at once. Ightham Church, too, is not devoid of interest, possessing a unique window in the north wall of the chancel, with stone pegs re-

ing right through as stops to the cusps, the ffect of which may be compared to that of lding gems to a rich gold setting.

Ightham Mote House being under repair, ermission to visit it had been refused. Some iembers of the party, however, wandered away o see it, and met the owner, who expressed his orrow at not having been able to receive them ll. They naturally asked him who was the rchitect for the restoration; but he said he had ot employed one, being satisfied that the people ho had charge of it were possessed of very good aste. A specimen of this taste is the wording f their sign-board, which announces, without unctuation, "Houses furnished and decorated n antique and artistic styles Oxford established 814 Designs and estimates free."

Most of the members, however, followed Mr. Harrison into his little garden, and subsequently nto the attic over his shop, to inspect his rare ollection of flint inplements, and listen to his nteresting description of them. He traced them ack through the various Stone Ages, from the ater and more polished forms of comparatively ecent times to natural stones just trimmed into orm by man—the very earliest forms, which had een first found and proved to be man's work by Mr. Harrison himself. These were found by im in gravel beds—the beds of ancient rivers, vhich now form the cappings of hills left after lenundation of the surrounding valleys to depths arying from 100ft. to 300ft., and many of them how signs of having been in glacier beds subse- uently to having been worked by man. Mr. Harrison said that even the most conservative eologists admitted that they proved that human eings lived in England 180,000 years ago! It vas with regret that, after tea, the members ook leave of Mr. Harrison, and travelled on to Ashford—where the parish church was lit up for he inspection of a few enthusiasts—and continued hence their pilgrimage to Canterbury, where they rrived late on Thursday night.

Next morning, the first place visited was East- gate Hospital—a simple building, mainly of the 5th century, but with a little Norman work in it. They stayed there only a short time, and then valked on to Westgate, over which they were onducted by Mr. F. Cross. The city surveyor, Mr. F. Baker, had many fine rubbings of brasses, aken by himself, hanging in the room over the gateway, which were much admired, though unfortunately nobody was present who could properly describe them. From the roof a fine iew of the cathedral was obtained, while upon he other side the attention of the visitors was lrawn to a 17th-century wrought-iron sign projecting over the footpath from the front of an ld inn. The cathedral itself, over which the arty were conducted by Mr. J. R. Hall, of ourse proved full of interest, especially to those vho had not previously visited it. The Norman nd Transitional work, all that eastwards of the ransepts, was, Mr. Hill said, built in the years etween 1189 and 1199. Its French character vas much noticed, its converging lines towards he east, to obtain an appearance of great length y false perspective, its acanthus carving, and he unusual four-centred arches. Before leaving, he library, cloisters, and chapter-house were isited, and then the Mayor, Mr. W. W. Mason, oined the party, and went with them to lunch. Afterwards St. Augustine's College was visited, nd the members were received there by Mr. Ewell, in the absence, through illness, of the Warden. Partly within the grounds, and partly without, are found the ruins of St. Pancras Church, of which a plan had been prepared for nspection by Mr. W. J. Jennings. This shows learly the different periods to which its walls an be ascribed; but much indignation was aroused on its being found that the chancel portion, n which many of our Saxon princes must have worshipped, is now used as a pigsty by an un- appreciative pork butcher.

Mr. Bowen next met them at St. Martin's Church, and conducted them over that pretty little structure. The font, with its ribbon orna- ment formed of dots between two rolls in an interlacing pattern, he ascribed to two different periods; but this explanation scarcely satisfied the visitors, who would have liked a geologist's opinion as to the different characters of the stones of which it was built before accepting it.

On their way back to the hotel to tea, several members visited the Castle Keep, now used as a coal store by the gas company. No doubt it serves his purpose admirably; but probably it would be better cared for if put to a less practical use.

After tea, a formal meeting of the Society, to which many of the townspeople had been invited, was held in the Guildhall by kind permission of the Mayor, who opened it by a few words of kindly welcome, and passed round the city mace and sword for inspection. Then followed the usual nominations for election in November next, and the ballot for gentlemen nominated for election two months ago, all of whom were elected. The President, Mr. Robert Walker, A.M.Inst.C.E., of Cork, who was in the chair, announced the death of Mr. A. T. Williams (member), whom he had known personally, and a short sketch of whose career he gave; and then called upon the secretary to show a series of photographs which he had taken during the week, and which Messrs. E. and G. Fullagar, photographers, of Canterbury, had converted into lantern slides in time for the meeting, *con amore*. The hall attendants, unused to the lantern, caused a little delay by bad management of the gas, but when this was put right the views appeared one by one, recalling the events of the past few days to those who had accompanied the party throughout, and showing to the others present, and the Canterbury residents who were there, what had been done. The pictures were generally excellent, and it is understood that copies may be obtained at a moderate rate through the secretary of the society. When the views had all been shown, and the free and easy lecture ended with which they were accompanied, the President made a short and happy speech, introducing several traditions about Canterbury and the neighbourhood, with which even the residents were unacquainted. A vote of thanks to all in the locality who had assisted the Society was proposed by Mr. G. S. Bridgman (vice-president), and seconded by Mr. W. Allport (member of Council), to which Mr. J. R. Hall replied, and this was followed by a special vote of thanks to the Mayor, proposed to Mr. G. A. T. Middleton, and seconded by Mr. S. C. Johns, to which he replied, and after which the meeting broke up.

Saturday was to see the end of the excursion, and in the morning a greatly-reduced party—not many more than twenty—travelled on to Dover, some being left behind to sketch at Canterbury, and others to return whence they had come. A large brake met them at the station, and in it all managed, with some difficulty, to squeeze, even finding room for their excellent guide, the Rev. Canon Puckle, as they drove up the hill. At the Castle entrance they were met by Mrs. Montgomery Moore, the General's wife, who received them most kindly, and conveyed to them the General's permission to photograph and sketch objects of architectural interest, a permission which, rarely given, was highly appreciated. Canon Puckle first led them to the base of the Roman Pharos, pointing out the evidences of its Roman origin, but he could scarcely have been right in saying that Roman mortar was made of lime alone, for it was full of a coarse grit; nor in stating that bricks equal in quality to those used by the Romans could not be turned out of modern brickfields. Probably the neighbouring church, which he next described, was of greater interest to the visitors, who listened attentively to the narration of its history, and noted the construction of the British semicircular chancel arch—the tiles of which, of imitation Roman make, converge to a point far below the centre of the semicircle—and that of the beautiful 13th-century vaulting and bosses of the chancel; while the recently added termination of the tower called forth uni- versal execration.

The strange and beautiful Transitional detail of the oratory in the Castle keep next called for admiration, the noticeable feature being the placing of the dog-tooth ornament on the roll and pointing across the hollow. The Warden, coming forward, conducted the party then through the armoury, while the President and a few others accepted Mrs. Moore's invitation to inspect the General's private rooms.

Returning down the hill, Canon Puckle led his following into his own church of St. Mary, and most interestingly described its history as traced by him. He showed where the walls of the Roman bath originally came, how far the Saxon church extended, and how far the Norman, with its exactly similar detail and different construction. The tower arch is of most unusual form—horseshoe, with jambs wider apart at the springing than at the floor level, as if it had been copied from a semi-circular arch which had had abutments unequal to the resistance of its thrust. The Canon also described his discovery of an embalmed body, laid in sanctuary but not buried, beneath the flooring of the church, which he and others had been compelled to consider as that of King Stephen.

In the afternoon a visit was paid to Dover Priory, when Dr. Astley acted as leader—and with this terminated a most interesting and enjoyable excursion, not marred by a single hitch, though the party was large throughout, and the arrangements had originally been made for a much smaller number.

BERLIN ARCHITECTURE.

THE *Wiener Bauindustrie-Zeitung* calls atten- tion to the extraordinary improvement which has been made within a few years in the architecture of Berlin. Not long ago Berlin was distinguished by the meanest architecture in the world. Its buildings, large, but ill-proportioned, were universally constructed of brick, plastered on the outside with stucco, and diversified with belts, or cornices, of great projection, made of wooden furrings, feebly secured to the brickwork, and covered either with zinc or plaster of Paris. Occasionally ornaments cast in stucco, or modelled by hand, were used to decorate a window or a frieze, but the use of real stone was alleged to be out of the question, on account of the distance from which it must be brought, while the rational use of brick was never, apparently, thought of at all. With the advent of the pre- sent generation of architects it began to be found out that the use of stone was not wholly impra- cticable, even in Berlin, and that in the end it was quite as economical as the perishable stucco. The first stone employed, as might have been expected, was worked by the native stone-cutters in any- thing but an artistic style. Not having any idea how cut stone ought to look, they rubbed and scraped it into as close an imitation as possible of the stucco to which they were accustomed; but it was at least solid, and, from the necessity of the case, they were obliged to retrench the pro- jection of their stone stringcourses and cornices. By degrees, through the exertions of the archi- tects, the practice of stone-cutting was improved, and tooled faces and rustic joints began to give character to the exterior surfaces, while real sculpture, well designed and well executed, came into use. Not content with this, the architects undertook to use brickwork frankly. They hunted up Mediæval examples, of which there were plenty to be found, and imitated them, adding such modifications as their taste suggested, and now the North German brickwork is perhaps the most interesting, from its variety and ingenuity, of all the manifestations of German architectural skill.

NOTES ON BUILDING PRICES.—VIII.

By John Leaning.

GENERALISATIONS AS TO COST OF BUILDINGS.

THE desirability of some rules by which the approximate cost of a building may be arrived at before it is built has been felt by most persons engaged on its production. This is a branch of investigation which may reasonably be alluded to in this connection. The best known and most generally used method is by calculation of the cubic contents. Measuring the length, breadth, and height from the top of concrete to half-way up the roof, multiplying the dimensions together and pricing the content thus arrived at by a price per foot cube.

Another method is roughly taking out the quantities and pricing the items, as described in Leaning's "Quantity Surveying."

Professor Kerr, in his "English Gentleman's House," estimates cost per square.

The method of calculation is to take the dimensions of every room and portion of the house internally, multiplying their relative length by the breadth. Then squaring the floor-spaces of the passages and stairs in the same manner, and adding to the total one-fifth of the whole for walls and waste. To all the results obtained by estimating the cost of the house by the number of superficial squares must be added an allowance for incidental expenses. These would be professional services, including law charges, special fittings (grates, mantels, and the like), external fences and boundary walls, and some internal decoration, and should not be estimated at less than 20 to 25 per cent.

Professor Kerr's Table of Approximate Cost of Buildings.

Total Outlay required.	The Family Department.							The Servants' Department.							Total outlay resulting.
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	
	Price per cubic foot.	Average height of rooms.	Price per superficial square.	Corresponding number of squares.	Cost of the prices given.	Number of rooms to correspond.	Average price per room.	Price per cubic foot.	Average height of rooms.	Price per superficial square.	Corresponding number of squares.	Cost at the prices given.	Number of rooms to correspond.	Average price per room.	
£	d.	ft. in.	£		£		£	d.	ft. in.	£		£		£	
1,250	8	12 0	40	22·30	892	13	68	6	11 3	28	12·90	361	13	28	1·253
2,500	9	12 9	48	37·50	1,800	20	90	6½	11 7	31½	22·20	700	19	37	2·500
5,000	10	13 9	57⅔	63·10	3,639	30	121	7	12 0	35	39·00	1,365	29	47	5·004
10,000	11	15 0	69	106·00	7,314	45	163	7½	12 6	39½	68·00	2,686	43	62	10·000
20,000	12	16 6	83	178·00	14,774	67	220	8¼	13 0	44½	117·70	5,237	65	80	20·011
40,000	13	18 0	100	298·00	29,800	100	298	9	13 6	50	204·00	10,200	97	105	40·000
80,000	15	19 0	120	501·00	60,120	150	400	10	13 6	56	355·00	19,880	145	137	80·000

Estimate Showing the Amount of each Trade in a Building of an Assumed Cost of £5,000, and the Increase in Cost of both Labour and Materials.

Labour.	1865. Apportioned value of each trade.	1865. Relative proportion of Labour and Materials.		1875. Increase in Cost of Labor.		Increase in cost of Materials. Per Cent.		Decrease.	Proportion of Cost of Labour to Cost of Materials in the several Trades. Labor Per Cent.	Plant and Materials. Per cent.	Average Increase and Decrease in Total Cost in 1875 over 1865.	
	£	£	£	Per Cent.	£	Per Cent.	£	£			£	£
Excavator..... 90	100	90	10	28	25	—	—	—	90	10	25	—
Bricklayer 25	1200	300	900	27	81	—	—	100	25	75	—	19
Mason 60	800	480	320	24	115	25	80	—	60	40	195	—
Slater..... 10	50	10	40	27½	3	20	8	—	20	80	11	—
Carpenter..... 25	400	100	300	24	24	7	21	—	25	75	45	—
Joiner 60	800	480	320	20	96	16	51	—	60	40	147	—
Smith and Founder 20	350	70	280	20	14	—	—	—	20	80	14	—
Plumber 25	350	88	262	25	22	14	37	—	25	75	59	—
Plasterer 60	400	240	160	27	65	10	16	—	60	40	81	—
Glazier 15½	150	23	127	22	22	20	25	—	15	85	51	—
Painter 50	150	75	75	22		5	4	—	50	50		
		1,956	2,794		467		242					
					1,956		100					
					2,423		142					
							2,794				15	
							2,936				643	
Fees of Quantity Surveyor, Local Authorities, and sundry other Fees, &c.	250					265					19	
					£5,624	Nearly 12½ per cent. advance on 1865.					624 5,000	
	£5,000	£5,000									£5,624	

As to cubic value, Professor Kerr says, a well-built residence is found to cost as follows. Per cubic foot:—

For the main building or family department ..... 8d. to 15d.
For the attached offices or servants' department ..... 6d. to 10d.
For stables and farm offices ..... 4d. to 6d.

Mr. Wheeler, in his "Choice of a Dwelling," 1872, recommends calculation by the square, including the walls, and some of his opinions as to the value are as follows:—

A first-class house in London not exceeding 1,800ft. super. per floor, that is, 30ft. by 60ft.

Principal rooms ..... £50 per square.
Chambers and secondaries ..... £35 ,,
Offices ..... £25 ,,

A well-built London or suburban residence, not wholly detached, and not exceeding 900ft. super. each floor, or 22ft. 6in. by 40ft.:—

Principal rooms ..... £40 per square.
Chambers and secondaries ..... £30 ,,
Domestic offices ..... £20 ,,

A London or suburban residence, plainly but honestly built, as an investment or for a very moderate scale of living, and not exceeding 900 superficial feet each floor:—

Principal rooms ..... £35 per square.
Chambers..... £25 ,,
Domestic offices ..... £18 ,,

The bare price per foot cube of a building, unless one knows the character of the work, is of little value; but notes of the contents of any building, with particulars of the nature of their finishings and materials, should be kept by the student, and such data will prove valuable for purposes of comparison. A few rates are given below:—

	s.	d.	
Labourers' cottages	0	4	per ft. cube.
The cheapest dwelling houses about	0	5	,,
The best mansions.....	1	6	,,

Place.	Name of Contractor.	Cubic contents.	Lowest tender.	Per foot cube.	Provisions.	Excavating and Draining.	Bricklayer.	Mason.	Slater and Slate Mason.	Carpenter.	Joiner.	Gasfitter.	Plasterer.	Founder and Smith.	Plumber.	Glazier.	Painter.	Bells.	Preliminary.	Surveyor and Lithographer.
House at Oxford.		93,318	£3,837	9¾d.	670	101	800	496	155	407	314		177	268	191	73	45	4	47	89*
House at Kensington.		111,654	£4,764	10¼d	399	144	1228	555	61	331	882	18	276	222	240	91	110	29	51	127†

Remarks.—* Brick walls faced with coursed rubble, roof of stone slates, stone windows, with mullions and transoms, iron casements, deal joinery. Three miles from a railway station. Roads "uphill" all the way.
† Blanchard's red facings, Portland stone strings and cornices, about half the slating green Westmoreland, joinery deal, electric bells.

	s.	d.	
Very good country houses may be built for.....	0	10	per ft. cube.
Stables.....	5d. to 1s.		,,
Breweries	0	5	,,
Maltings	0	2½	,,
Churches (some as low as 5d.)	0	6	,,
Lunatic asylums have been built (per patient £140)	0	6	,,
Do. wards alone	0	4½	,,
Mr. Street's design for St. Mary's, Edinburgh, was estimated at	1	0½	,,
Warehouses	5d. & 6d.		,,

Mr. Young's preliminary estimate for Glasgow Municipal buildings was: basement, 9d.; superstructure, 1s.; towers (above last), 1s. 6d. Mr. Corson's estimate was 1s. throughout.

Messrs. Leeming and Leeming estimated their design for the new Admiralty buildings at 1s. for the main building, and 1s. 6d. for towers and work above parapets.

The cost of some well-known buildings has been as follows:—

	s.	d.	
Manchester Assize Courts	0	9½	per ft. cube.
Foreign Offices	1	0½	,,
Houses of Parliament	2	6	,,
Waterlow's Industrial Dwellings, average	0	7	,,
British Museum.....	1	6	,,
Do. recent additions.....	0	10	,,
Royal Exchange	0	11	,,
St. Thomas' Hospital	0	9	,,

Labour and material have risen in value since most of the foregoing were built.

Buildings of the School Board for London, 1870 to 1880, 5½d. to 7¾d.; 1880, 6¼d., not including boundary walls or playgrounds.

Some more recent examples are as follow:—

	s.	d.	
Hotel Victoria, Northumberland Avenue	1	6	per ft. cube.
Holborn Viaduct Hotel	1	4	,,
Holborn Town Hall.....	1	2	,,
Railway clearing house, Seymour-street, Euston-square.	0	6½	,,
New post office, St. Martin's-le-Grand (corner of Newgate-street)	0	8½	,,
Bow-street Police-station	0	11	,,

Other methods of calculation have been adopted, as the price per scholar for schools, per bed for hospitals, per sitting for churches and chapels.

Breweries per quarter—i.e., the quantity of malt that can be dealt with at one brewing, including machinery and plant, and exclusive of malting or cooperage, the approximate cost is as follows:—

5	Quarters	£500 per quarter.
20	,, ...	400 ,,
40	,, ...	350 ,,
100	,, ...	300 ,,

See also "Breweries and Malting," R.I.B.A. *Transactions*, 1872.

Schools cost from £4 to £10 per scholar. The London Board Schools have cost for the buildings about £10 15s. per head from 1870 to 1880.

Hospitals per bed:—

St. Thomas's Hospital.....	£650
Do. one pavilion without administrative buildings	250
Herbert Hospital, including administrative buildings	320

Workhouses:—

West London Workhouse, Holloway, per inmate	£48 (Tarbuck)
St. Pancras Infirmary, Highgate, per inmate	68 ,,
Chorlton Union Hospital, per inmate, under	50 ,,

Churches per sitting: Minimum £4; of the highest class, £10 to £12.

The proportion of carcase to total cost of a building is about one-third—i.e., one-third carcase, two-thirds finishings. The total cost of a building is approximately (a little more than) three times the cost of the brickwork for buildings of the commonest class; but for buildings of average quality five times the value of the brickwork, or four times the bricklayer's bill.

Record of the proportion of the cost of work in each trade may advantageously be kept by the student in some such form as follows. Examples from actual practice are given in the above table.

The proportion of labour to material is a subject of investigation which the student of prices may pursue with advantage. As an indication of what may be required of the expert, the following table from "The Rise of Wages in the Building Trades of London" (R.I.B.A. sessional papers 1877-78) may be useful. The paper was prepared by Mr. Stephenson (Hunt and Stephenson) to compare the cost of re-erecting a dwelling-house in 1875 with the cost of its erection in 1865.

The estimator will find himself but imperfectly prepared for his work if he has not previously acquired the art of taking off quantities with reasonable facility; such practice is an admirable training of that analytical faculty which good pricing requires, and he should accustom himself to value in accordance with the best system of measurement he may know. The best systems were framed and adopted with special view to that end.

Notes of the number of rods of brickwork, compared with the cubic content of the building, may be preserved with advantage. A few notes

of this kind, from a recent paper read by Mr. Rickmam, may be useful:—

	Content in cubic ft.	Rods of reduced work.
A University building of monumental character ..	1,010,000	1 to 150
A country house	160,000	1 ,, 1,600
A London club house.....	2,270,000	1 ,, 1,849
A set of insurance office buildings	527,000	1 ,, 1,850
A hospital.....	3,250,000	1 ,, 1,184
A country house	392,000	1 ,, 1,912
Ditto.	300,000	1 ,, 1,962
A paper warehouse.....	400,000	1 ,, 2,090
A set of residential chambers	386,000	1 ,, 2,100
An hotel	4,000,000	1 ,, 2,296

Such an investigation might be pursued as to the proportion of beds and joints, and other labours to a given quantity of stonework, according to its character, cubic feet of timber, yards of plastering, &c.

Records of such information as the above are of use in the scrutiny of a bill of quantities before sending it out. A surveyor will frequently be surprised by the quantities in his bill, and will need some such data to reassure him.

ALLOWANCE FOR SMALL QUANTITIES.

Work in small quantities is worth more than in large quantities; builders in pricing and estimating usually increase the price by 20 to 25 per cent., and this probably covers the extra cost as far as a general rule can, as if applied throughout the bill one error will balance another; but it is better to take each case on its own merits, and the percentage may reasonably vary from 10 to 50 per cent. It requires considerable experience to decide what this percentage shall be, and when it shall be added.

MATERIAL IN DAY ACCOUNTS.

The argument for an increased price for all the material charged in day work account is often a fallacy; in many cases it costs no more to supply material in small quantities than in large, increased cost is after all the only reason for allowing a higher rate.

METHOD OF BUILDING.

Intimately connected with the question of the cost of a building, is the method adopted for its erection; the relative advantages of various methods are, in the order following, the cheapest and best first:—A contract on quantities, a contract without quantities (on drawings and specifications), on a schedule of prices, purchase by the building owner of materials, and employment of workmen supervised by his clerk of works.

FEDERATION OF AMERICAN ENGINEERING SOCIETIES.

An attempt is being made to affiliate the various American Societies of Engineers, and suggestions for a general organisation of the profession have been published by the Western Society of Engineers, who are endeavouring to unite in this object with the American Society of Engineers. Several plans have been proposed by the latter body for the formation of local associations, and these are published in the June *Proceedings*. These plans generally propose branches under certain rules, the absorption of local societies as chapters of the American Society, yet holding the individual interests of their members. The plans belong to two classes, affiliation plans and federative plans. The Western Society say: "The preference of our Committee is for some kind of organisation which will afford the advantages both of affiliation and federation, and which will build up one strong homogeneous society, open to all the members of the profession under their appropriate grades, provided that this can be organised so as to recognise in some way all the existing local societies and their membership, and preserve the autonomy of the societies, and foster the local meetings that have been found so valuable as to lead to the increasing organisation of engineers' clubs, even when the members were already connected with the American Society of Civil Engineers." The suggestions for a general organisation of engineers follow, and are based on the principle of allowing the local bodies to have their own local by-laws, provided they do not conflict with the general by-laws of the association, and that there be a representation of each branch in the general board of direction. The value of a federation of the societies cannot be doubted if each society has its autonomy and individuality preserved, and is represented on the general council.

CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—XII.

By Banister Fletcher, Jun., A.R.I.B.A.

THE ENTRANCES IN THE 30-METRE GALLERY.

Starting from the dome, we come, firstly, to "Orfevrerie," and one remarks at starting what a large part colour takes in the decoration throughout the gallery; colour is predominant everywhere, and in general with harmonious effect. The designs to these entrances are all of them endeavours to symbolise the products of the different sections exhibiting, or at least to give a design whose characteristic idea or "motif" should convey an idea of the class represented.

Orfevrerie is designed somewhat differently from the others, inasmuch as the entrances are at the side, whereas most of the others are in the centre. The design consists of two large semi-circular arches resting on circular columns, painted an azure blue, which inclose a smaller bay, ornamented with arabesque, &c., on a white ground. The two large arches, right and left, are flanked with escutcheons of the old Goldsmiths' Guilds of Paris, Lyons, Limoges, and Tours, and are inclosed under an architrave frieze and cornice, on which rests an attic composed of small columns and semi-circular arches. In these small divisions, on a dull gold ground, are painted the names of the principal French goldsmiths of all time.

Bijouterie.—The exhibitors of this class have evidently thought that the way to characterise their entrance was to use architecture as a framework on which to paint symbols of jewelery—cameos set off with gold and intermingled with wreaths and garlands, vases enriched with imitations of precious stones, all painted with a key-note of pink, grey, and gold, serve to symbolise the section exceedingly well.

Crossing to the *Céramique Section*, we find, as might be expected, that the architect has taken advantage of the material itself to be represented, and has worked it into his design. The grouping consists of a semi-circular headed entrance doorway, with a statuette on each side treating of the History of Pottery, inclosed in a niche by small glazed faïence columns and pediment, &c. On each side of the entrance are two semi-circular arches on a central column. Above these are worked in very cleverly a series of eight panels, representing the various processes in connection with pottery, delineated in plaster. The colouring is exceedingly harmonious, and the general appropriateness of this entrance is very self-evident.

Opposite this entrance is that to the "Habillement des deux Sexes," which, of course, has to rely on painting. It is peculiar, however, to notice that the women introduced into these fresco paintings have as little of that necessary article to which this entrance is put up as is generally considered sufficient.

We now come to the two contiguous entrances designed by M. Hermant, the architect of the Portuguese Pavilion—namely, that to "Meubles" and "Tapissiers and Decorateurs." That to "Meubles" is probably one of the most satisfactory of these compositions, both as regards "motif" and composition. It is executed in plaster, coloured to imitate a dark brown wood (say dark oak), and is conspicuous against the light colouring to the surrounding doorways. There is a square-headed central entrance, draped, and on each side a bay with a low three-centred arch. Over each of these is a bas-relief in burnished plaster to imitate wood, and having on each side circular columns of a wooden type. On the face of the four piers dividing the façade are four figures, also in burnished plaster, representing respectively a wood-carver, a cabinet-maker, a designer, and a decorator; and above the levels of these, and separated by the consoles supporting the cornice, are painted the names of celebrated wood-carvers and designers, amongst which one notices Jean Jonjou, Boule, Le Pantre, Du Cerceau, Delafosse, Riesnier, and Carlin. The effect is satisfactory with its rich, sober, monochromatic colouring.

The next entrance is that to "Tapissiers and Decorateurs," also by M. Hermant, who seems to have this more difficult to treat. It is designed in Louis XVI. style, in plaster, in imitation of marbles (keynote red and green). Two compositions at the sides, by Toché (who also painted the frescoes to the Retrospective Exhibition), alone reminds one of the "motif" of the doorway which is to symbolise the art of the "upholsterer." Retracing our steps on the other side we come to the entrances to "Silk" and "Wool and Cotton."

The entrance to "Wool," &c., has a very rich central "motif," with twisted columns and pediment, and a seated figure supported on a corbelled base.

The entrance to "Silk" the architecture takes a second place, the spaces being filled up with painted canvas representative of the industry symbolised.

The "Armourers" Section, which might have been expected to have given us something extremely representative of their art, have only a few groups of armour, and a cavalier painted on a background of gold, to recall us to the fact that we are entering their section.

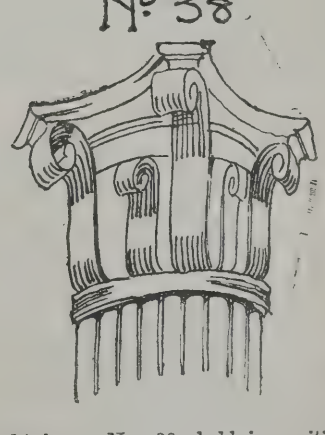
Classes 42, 43, 45, and 47 ("Forestry, Hunting, and Fishing") is a characteristic front entirely of wood. In the centre is a ship's prow, and ornamented in the semicircular arch from top to bottom with a crocodile on a gold ground (the ship's prow is fitted with oars and cables, &c.). The other ornamentation consists in the frieze over the side opening with skins of beasts and stuffed animals, which, although appropriate to the opening, are not architectural in any sense of the word.

The entrance to "Horlogerie," opposite, is as suitable a framing to an entrance of watches and clocks as could well be imagined. The design is said to have been founded on the "Vieille Horloge" at Rouen. There is a central entrance and two side bays. At the top of the central composition there is a silver bell, then the hour sand-glass, and inclosed under a tastefully-designed pediment a clock, right and left louvre-boards, and then bronze bells; over the side bays on each side are semi-dials, with the moon and golden stars on a sky-blue ground; below are other symbols of horlogerie. Starting from the key-stone, as it were, of the side bays, and describing a semicircle in an immense dial with the hours marked on. This is, of course, very much out of scale, and spoils the rest of the composition, which is exceedingly graceful and well thought out.

Passing the entrance to "Bronze et Fonte d'Art," in which the application of bronze in architectural work is exposed, we come to

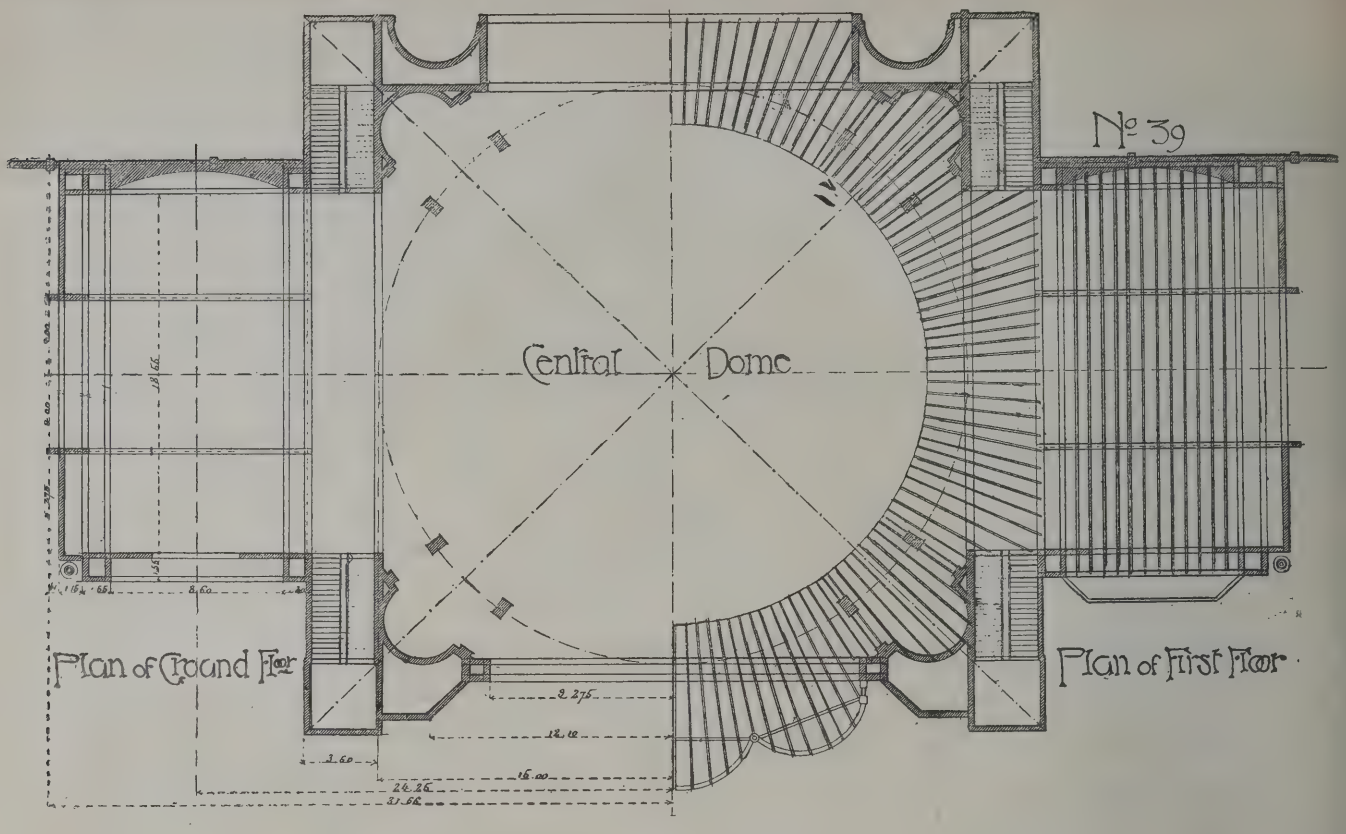
THE ENTRANCE TO THE MINING AND METALLURGICAL SECTIONS.

M. Schmidt is the architect, and it seems to be a marvel of workmanship. It is composed of forged iron made at the works at Pompey under the architect's direction. It is composed of a central arch bigger than the side arches, of semi-circular form, made up with a lattice-work arrangement of flat irons and implements. The arches rest on circular hollow columns composed



of upright irons, No. 38, held in position by bright iron bands, which also form the uprights into an entasis. The ironwork is left a natural colour, and the only relief is where it is polished. It is exceedingly well executed, because they say it made up of ordinary sections, or sections made with ordinary machinery, which will be sold as such at the end of the Exposition. There is nothing, not even a painting, in this façade, which is only iron, and yet one can look at with as much pleasure as on its neighbours, with all their frescoes and colour, which I have been describing.

Opposite this is the entrance to the Class 41, which is also exclusively decorated to the products of the group to which it forms the entrance. For instance, the columns are of cannons, and



groups of implements which are used in diggings for mines and working them, also decorating the arches themselves. In the parapet above the main cornice are cannon-balls and shells, with chains from lion's mouths falling down between.

This is the end of the entrances to the various sections, and one way, and that in many instances, at least, they are as novel as they are pleasing, imbued as they are with a sense of fitness, which, in installations of this kind, French architects seem so thoroughly at home.

THE "DOME CENTRAL" OF THE PALAIS DES EXPOSITIONS DIVERSES.

I have to acknowledge my indebtedness to M. Bouvard, the architect of this magnificent dome, and also M. Ulysse Gravigny, his "premier inspecteur," for much of the information contained in the following pages, and also for an interior photograph showing the dome in conjunction with the restaurant galleries, and an interior photo from a water-colour sketch, showing the construction of the pavilions; this latter I attached to my report. In my description I must translate largely from a long letter kindly written to me by M. Gravigny.

The dome itself was commenced on the 31st of October, 1887.

The monument entrance to the Palais des Expositions Diverses, and really the principal entrance to the Exposition itself, comprises a central nave flanked right and left with two pavilions, the framework of the whole being in ironwork. For general disposition see No. 39 from *Le Génie Civil*.

The dome itself is formed by eight half-trusses, supported by eight standards 130ft. high. The iron standards are held in position by three circular rings (No. 40 from *L'Architect*).

The two lateral pavilions serve also to bind the dome to the adjacent galleries.

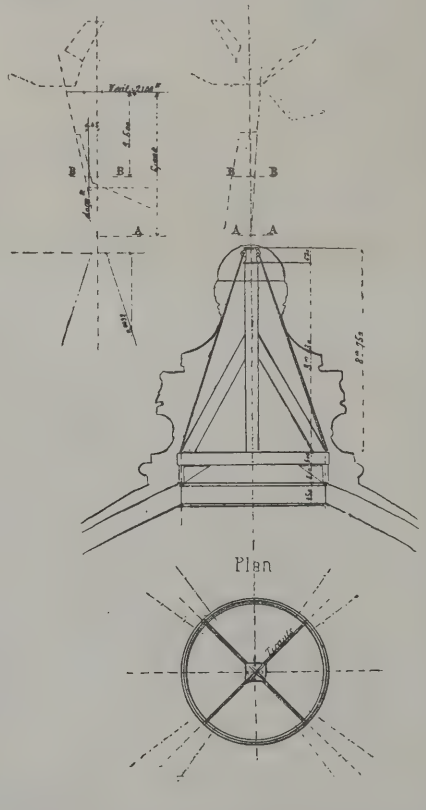
The top of the dome is at 60 mètres (196ft.) above the level of the ground.

At the first floor, 32ft. above the ground, is formed a circular balcony, which is reached by four staircases situated in the corners on plan; this balcony communicates right and left with two pavilions, which on the first floor were used for conference rooms. From this balcony, which abuts on circular projecting galleries on the central entrance, is obtained a fine view under the great legs of the Eiffel Tower, and the Trocadero beyond, as also on the other side a fine view down the immense "galerie de 30 mètres," with its entrances on either side full of colour and feeling right to the circular dome forming entrance to the "Palais des Machines."

At the height of the first circular belt of ironwork, that is to say, at about 72ft. from the ground, the main coupled standards are brought together (see No. 40 from *Le Génie Civil*), as it were, in pairs by pediments, with sculptured "motifs" representing the four principal agents of production—L'Air, L'Eau, la Vapeur, et l'Electricité, by MM. Bourgeois, Plé, Pècon,

Nº 41

Projection verticale de profil. Projection verticale de face



and Desbois. These pediments, I ought to mention, are supported by pilasters, backed against the trusses, containing between them a large shield, with the initials "R.F." inscribed in the centre.

Between the first belt and the upper cornice, a deep decorative frieze, 20ft high, runs round the interior of the dome, and represents France inviting all nations of the world to the Exposition, and receiving at the same time the products of the entire world. This is painted by MM. Lavastre and Carpezat in 12 panels, 20ft. high. Four inscriptions between the pairs of main principals bear the names of those nations who accepted the invitation of the French Republique.

Above the height of the third belt are allegorical sculptures of Europe, Asia, Africa, and America, MM. Delhomme and Cardonnier, sculptors, continuing the principal constructive "motif," finishing with painted panels relating to these four great continents of the world.

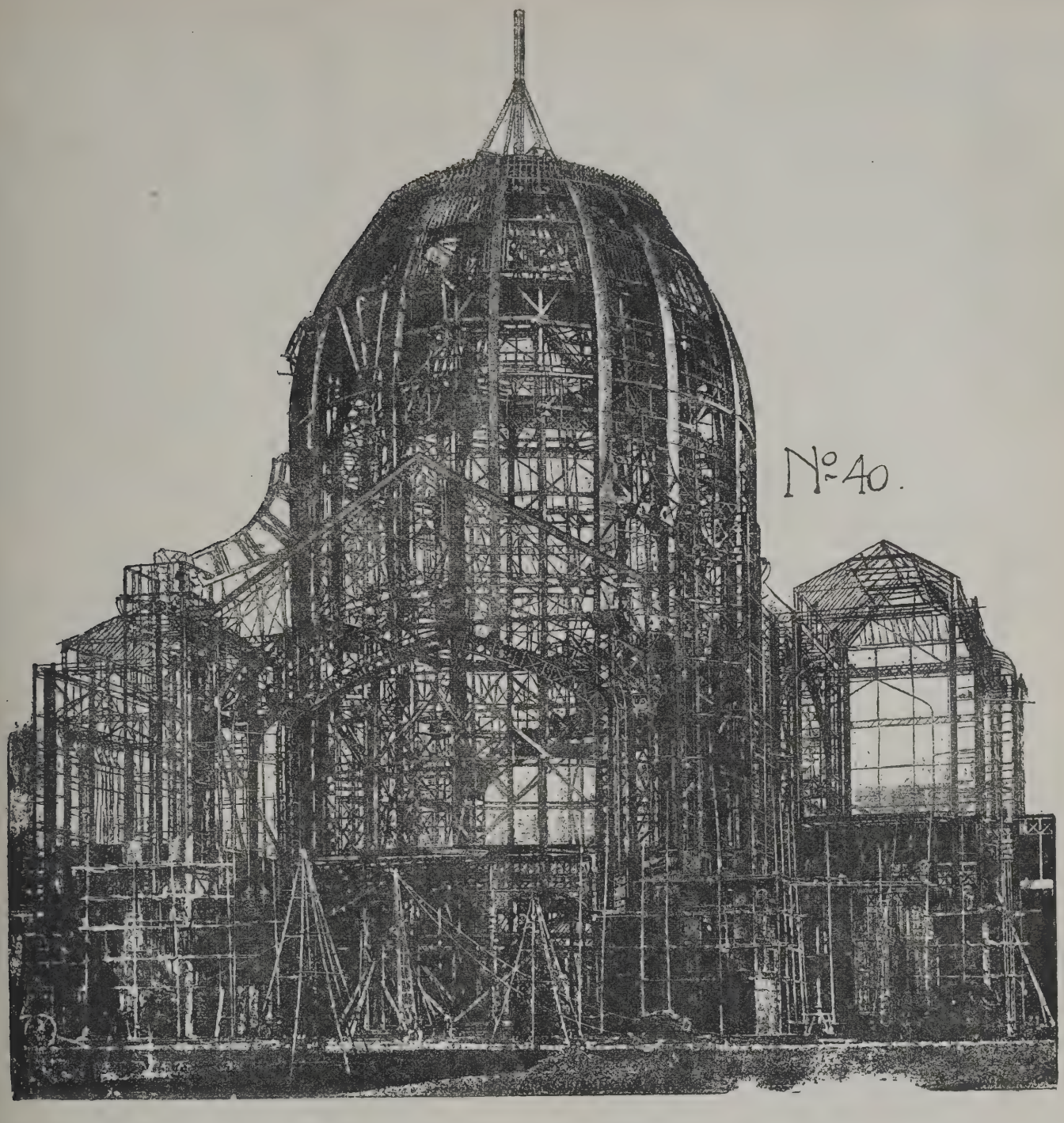
The trusses are bound together by the crowning cornice, with blocking course containing the shields and coats-of-arms of all the Powers represented at the Exposition.

The light to the dome is admitted by twelve large glass windows placed between the principal trusses. At the top, the French flag forms the centre of the ornamentation, from which escape, as it were, golden rays on a deep blue sky studded with silver stars.

Exterior.—The constructive lines of the dome are accentuated in tones of florentine bronze, picked out with lines of gold, carried up to the summit, on which is placed a statue 29ft. 6in. high, representing France distributing laurels, &c. This statue, erected in zinc "repoussé," by M. Coutelier, after the plaster model of M. Delaplanche, is supported on a skeleton of cast steel (see No. 41 from *Le Génie Civil*). The skeleton was made by MM. Moisant, Laurent, Savey and Co., and is fixed to the metallic framework of the dome. The total weight of the statue and its framework is 157cwt., or 7tons 17cwt.

The skeleton in steel is composed (see No. 41 from *Le Génie Civil*) of a central shaft starting the bottom of the left leg and going to the top of the head; from this central shaft are a series of secondary arms, upon which are fixed the framework for the different members of the body and the wings. The framework, &c., has been calculated to withstand a pressure of wind equal to 70 kilogrammes a square mètre, or about 154lb. to 1·196 square yard.

In the following lines is explained the manner employed for the fixing of the materials which have served for the decoration of the dome, and firstly, the materials employed are zinc, glazed terracotta, concrete or béton, in various colours, and "staff" or canvas plaster. The interior is decorated with painted canvas "à la colle" and "staff." The methods employed for fixing the different materials and "motifs" are the following:—



The statue in stamped zinc placed at the top of the dome is fixed as mentioned above by the interior framework; the fixing in position was accomplished in small portions, and the rigidity assured by dint of connecting bolts. The ridge, as it were, above the glazing, formed with lions' heads at the top of each half-truss, is also in zinc estampé, fixed upon the woodwork forming the cupola, and held to it by means of bolts, irons, &c. At the springing of the dome, and between the pairs of standards at the four angles, are placed four griffins, which are firmly fixed to the interior of the dome by braces in wood, and fixed to the face of the dome by angle irons; they are made in staff. The drum of the dome is formed with bricks "apparentes," and ornamented with bulls-eyes in glazed terracotta. These bulls-eyes are fixed to the iron framework. The "motifs" in "staff" which have been employed throughout in the decoration of the great entrance below the dome are placed and secured to the irons forming the great arches, &c., by metal straps or bands, or by iron network bedded in plaster. The coloured concretes in the base are secured to the brickwork by means of cramps and ties. In the interior, the "staffs" are fixed in the same manner as the exterior. The decorative canvases are lined and fixed by the aid of glue. The general grouping of this great entrance and dome is pleasing, and the outline of, the dome itself is very fine, but the lines of the entrance arch and pediment over are not happy, and the details of this part are anything but refined, and the enormous statue 30ft high at the top completely destroys the scale. By covering this up on the photograph, one sees this directly. The entrance evidently had to take the outline of the "Galerie de Trente Mètres," or vice versâ.

As it is necessary to emphasise very strongly the part which colour plays in the decoration of the dome, without it, its outlines in the distance would still be grand, but internally it would lose much of the grandeur of effect it now possesses. The architect has evidently relied to a great extent on colour for his effect. The dome, however, may be said to be a most impressive composition, well worthy of forming the main entrance of this great Exposition.

ARTISANS' DWELLINGS.

At the Sanitary Congress at Brighton, on Aug. 28th, Mr. Francis Hooper read a paper on "Artisans' Dwellings." He said he had observed with anxiety the spreading fashion for the erection of so-called model tenement dwellings. No doubt many economies were effected by making one drain, one staircase, one roof, and one water and gas service suffice for many; but when defects occurred, or disease arose, the evil was suffered by all. He put forward for consideration the question of tenant proprietorship, mentioning that in the north of England facilities for purchase had been largely taken advantage of by artisans, and had proved eminently beneficial in the encouragement of thrift, sobriety, and self-respect. He expressed the view that though tenement buildings, when well constructed, with due attention to sanitary details, were a satisfactory solution of the problem of housing large numbers of persons in a limited space, for the relief of congestion of the population the railway service to outlying districts by cheap trains must be extended.

It is stated that the Jezreelites, or the "New and Latter House of Israel," have just settled the claim of the builders, Messrs. J. S. Naylar and Son, against them for £6,000 by tranferring to the builders over six acres of land and the extensive range of buildings known as Israel's Training College. Messrs. Naylar have consequently dropped the action which they had commenced in the Chancery Division. The gigantic temple of the Jezreelites still remains unfinished and roofless.

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ILLUSTRATIONS.

NEW FREE LIBRARY, SALE.—ALMSHOUSES AT WELBECK.—KNOLE HOUSE, KENT.—R. C. CHURCH AT OSWESTRY.—COLET HOUSE, WEST KENSINGTON. — CONTEMPORARY BRITISH ARCHITECTS.—CONGRESBURY CHURCH, SOMERSETSHIRE.—FOUR SEVENTEENTH-CENTURY CHAIRS.

Our Illustrations.

SALE PUBLIC LIBRARY.

This building is to be erected in the centre of this Manchester suburb by public subscription, and handed over to the local board complete and stocked with books, for them to maintain afterwards, the ratepayers having unanimously adopted the Free Libraries Act. The building will be faced with red Northwich bricks, with Rainhill stone dressings, and the roofs covered with red and green Penrhyn slates and red Ruabon ridge tiles. The half-timber work will be in pitch-pine, stained and varnished, and filled in with cement. The whole of the internal fittings are to be red deal and pitch-pine, stained and varnished. All the rooms will be heated with hot-water throughout, there being no open fireplaces except in the librarian's room, and special attention will be paid to the lighting contrivances, to insure the least possible injury to the books from the gas vapours, and the ventilation of the building, to secure the best results. With regard to the internal arrangements, it will be observed that the library and reading-room are on the ground floor, and though actually in one room, are so divided by the low partition that borrowers have no need to interfere with the reader's comfort in the slightest degree. By this arrangement, also, the librarian has full control of the whole floor, either from his place behind the counter, or from his private room, which is inclosed by a glazed partition the full height of the room. By means of private stairs, he also has direct access to both first floor and cellar without coming outside the counter, whilst he is further provided with lavatory and w.c. for his own private use. The bookshelves and reading-tables are all placed at right angles to the windows, so that the light has full play down all aisles and to all readers alike. The upstairs rooms are to be used for ladies' and gentlemen's reference libraries, all the wall-space being utilised for shelving, and light being obtained from large roof-lights. The plan of this floor speaks for itself, however, and requires no explanation further. Ample cellarage is provided for stores, heating apparatus, packing and unpacking books, &c. The work is to be commenced at once, and carried out under the personal superintendence of Mr. Robert J. M'Beath, architect.

ALMSHOUSES, WELBECK.

These houses are now being erected at Welbeck for His Grace the Duke of Portland, by the desire of the Duchess. The houses will be for the benefit of widows on the Welbeck Estate, and are built within a short distance of the Abbey, so that the occupants may receive Her Grace's personal care and attention. The materials used are Whitwell stone for the external walling, with Anston stone dressings; the roofs are covered with Staffordshire tiles. The drawing was hung in the last R.A. Exhibition. The architect is Mr. John Brooke, of Manchester.

TWO INTERIORS, KNOLE PARK, KENT.

Last Thursday the Society of Architects visited this historic mansion of the Sackvilles, near Sevenoaks, and to-day, as an accompaniment to our report of the proceedings on page 314, we publish two interior views from the building, showing the grand staircase (see Building News, August 20, 1886) and the "chapel room," which is hung with tapestry and filled with choice furniture. The chimney-piece in this apartment is somewhat similar in design to those removed from Lime-street, City, some seventeen years ago, and now in South Kensington Museum. In the Building News for November 23, 1888, we gave two illustrations of historic bedsteads from Knole Park, and with them we printed a lengthy account of the building. Our illustrations then, as now, were reproduced from some excellent photographs by Mr. Essenleigh Corke, of London-road, Sevenoaks, to whom we are indebted for permission to issue these copies to our readers. They form part of a beautiful series of prints taken with the special consent of Lord Sackville during the past year, and some of the views were exhibited at the last Exhibition of the Photographic Society of Great Britain in Pall Mall. The set comprises some 58 or 60 pictures of the house and its contents, forming a valuable monograph of this unique old mansion, which is to be visited by the Architectural Association on Saturday in next week, the 13th inst.

THE ROMAN CATHOLIC CHURCH AND CONVENTUAL BUILDINGS, OSWESTRY.

The buildings were erected by Mr. T. Longueville, of Llanforda, for the accommodation of his co-religionists in and around Oswestry, at a cost of about £4,000, and consist of a church, priest's house, and conventual school. The builder was Mr. W. Bowdler, of Shrewsbury, and the architect was Mr. W. H. Spaull, F.R.I.B.A., of Oswestry.

ST. PAUL'S PREPARATORY SCHOOL, COLET HOUSE, WEST KENSINGTON.

(See description on p. 343.)

CONGRESBURY CHURCH, SOMERSETSHIRE.

Soon after leaving Yatton, the terminus of the Cheddar Valley Railway, the traveller to Wells will notice on the left hand the well-proportioned west front and spire of St. Andrew's, Congresbury, or, as it is pronounced locally, Coomsbury. The village is said to have taken its name from Saint Congar, a son of one of the Easterm emperors, who is stated to have decamped from the Imperial Court in order to escape a matrimonial connection enforced by parental authority. After travelling in Italy and France he settled here in King Ina's time, and, surrounded by marshes and thick woods, became a hermit and built an oratory to the Holy Trinity. The church possesses a Norman font, but the earliest portions of the building now remaining are of Late Thirteenth Century date, and comprise the nave piers and arches, the north and south doorways, and a double piscina in the south wall of the chancel. The oak rood screen is of a somewhat unusual design, and the carving is delicate and refined, though boldly projecting. The large east window of five lights has lately been filled with stained glass by the vicar, the Rev. Maunsel Eyre, and adds greatly to the beauty of the church. Besides the details given on the drawing there are several others of interest, notably the piscina.

CONTEMPORARY BRITISH ARCHITECTS.

(See description on p. 342.)

FOUR CHAIRS OF THE SEVENTEENTH CENTURY.

Amongst our illustrations this week will be found a sheet bearing the above title, on which are delineated four chairs of a very interesting and suggestive character. The Oak Armchair to the left, at the top of the page, is dignified and well-proportioned, and the carving is rich and good. Modern examples based on such a type should insure them a ready admission into a gentleman's mansion. A piece of furniture of this class, if well made, would always be worth having, and an object for the owner to point to with pride. The turning of the legs is very effective, and the strengthening bars are as elegant as they are efficient. The High-back Chair adjoining the latter, if more usual, is equally good, and is thoroughly quaint, and the scroll carving in the back and the turned work merit attention. The Child's Chair is surely not bettered by the fragile and easily-tilted modern invention. The weight of the stout oak in this specimen and the spreading legs, both elements of stability, show, like most old work, that the object for which a particular piece of furniture was designed was never lost sight of in the desire to bring forth something novel. The diminishing back, therefore, though adding much to its picturesque appearance, is the result not so much of any whim or striving for effect as the natural outgrowing of the primary need, the sloping legs below the seat becoming the sloping framing of the back above the seat. The carving is crude, but possesses, at any rate, spirit, and looks as if wrought by a hand with a mind behind it, and not as though produced by the precise monotony of a machine. The last chair on the page belongs to that sturdy class which, owing to strength and vigour of construction and outline, makes it a desideratum where it would be exposed to rough usage, and a couple of such chairs, with a table of similar character, would give a substantial appearance to an entrance hall at little cost. The originals are in the Science and Art Department, National Collection.

COMPETITIONS.

Camberwell. — A limited competition is in progress for the new public baths to cost £24,000 at Camberwell, and among the architects invited to compete, we understand, are the following:—Messrs. Spalding and Cross, Mr. R. Wellock, Mr. Charles Bell, Mr. Lewis Isaacs, M.P., and Mr. Thomas Verity.

London.—Tottenham Court-road is to have another addition to its large buildings, as the Whitefield Tabernacle is to be rebuilt on a vastly larger scale than the old structure. Several architects have been asked to send in designs, and the drawings will shortly be on view. It is said that a well-known Church architect will act as assessor for the promoters.

CHIPS.

A block of Corporation stables were opened by the Mayor of Accrington on the 22nd ult. They adjoin the new abattoirs in course of erection, and cover an area of 2,000 square yards. The fronts are of stone, backed with brickwork, and finished internally with white and glazed bricks, the internal woodwork being all of pitch pine. Messrs. Moore Brothers, of Rawtenstall, are the contractors for the buildings, which have been carried out at a cost of £4,700, from plans by Mr. William J. Newton, the borough engineer.

The Happy Valley at Llandudno, a portion of the slope of the Great Orme's Head, was formally presented to the town by Lord Mostyn on Friday. The grounds have been laid out by Mr. T. T. Marks, surveyor to the Llandudno Improvement Commissioners, and a feature is a fountain, executed by Mr. Maddocks, of Shrewsbury, from designs by Mr. A. B. Deakin, of that town, selected in competition. The fountain is Classic in character, and is of red Mansfield stone, Italian dove marble being used for panels and basins. Under the canopy is a bronze bust of her Majesty, executed by Messrs. Bellman and Ivy, of London.

The parish church of Mithian, Cornwall, built in 1861, has been receiled, the windows being renewed, and the internal walls replastered. Mr. J. Piers St. Aubyn was the architect for the restoration.

A county club for Glamorganshire is about to be built from plans by Mr. E. W. M. Corbett, of Cardiff, on a site in the Cardiff Arms Park, given by the Marquis of Bute. It will be three stories in height and faced with local stone and terracotta. The chief apartments are the dining-room, 45ft. by 23ft., committee-room, 20ft. by 13ft., and reading-rooms, each 27ft. by 21ft.

The renovation of the Vandyke Room, containing the portraits of King Charles I. and his family, and the ante-Throne Room at Windsor Castle has been completed, and workmen are now employed in redecorating the interior of the Queen's private chapel and the South Corridor.

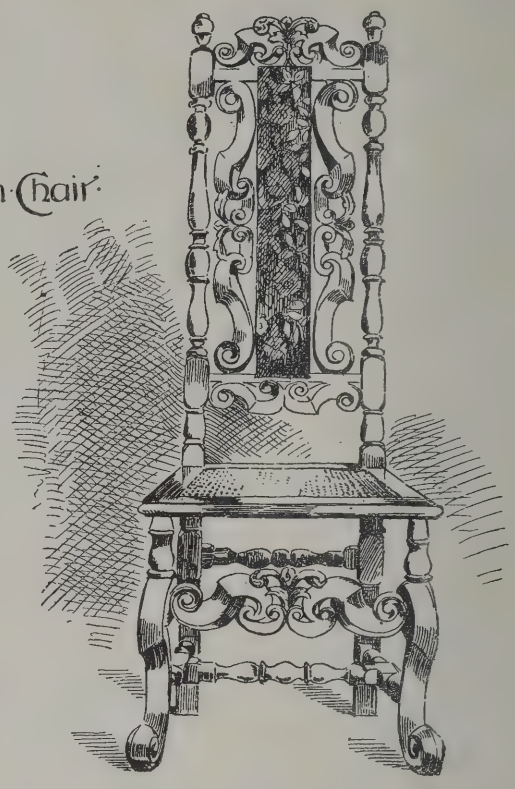
A stained-glass window, from the studio of Mr. Taylor, of Berners-street, has been erected in the Presbyterian Church, Gravesend. The subject is "The Good Shepherd."

UNIVERSITY OF ILLINOIS

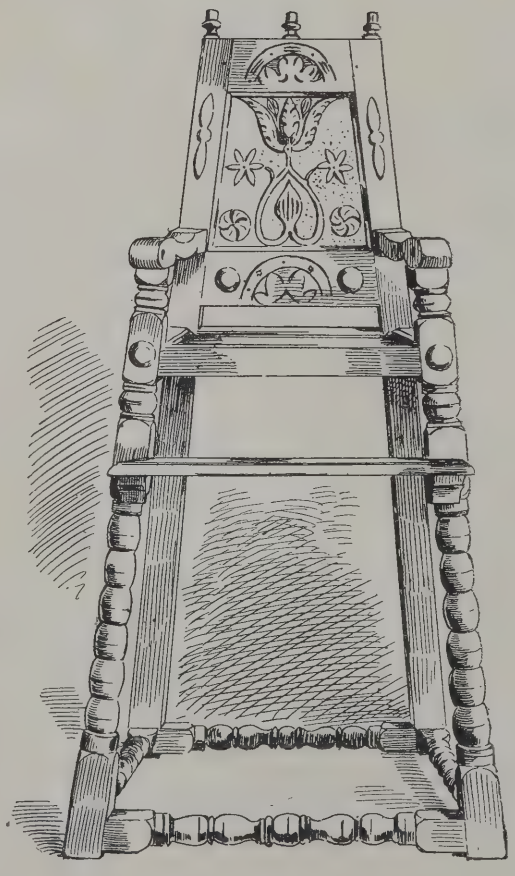
Four Chairs of the 17th Century



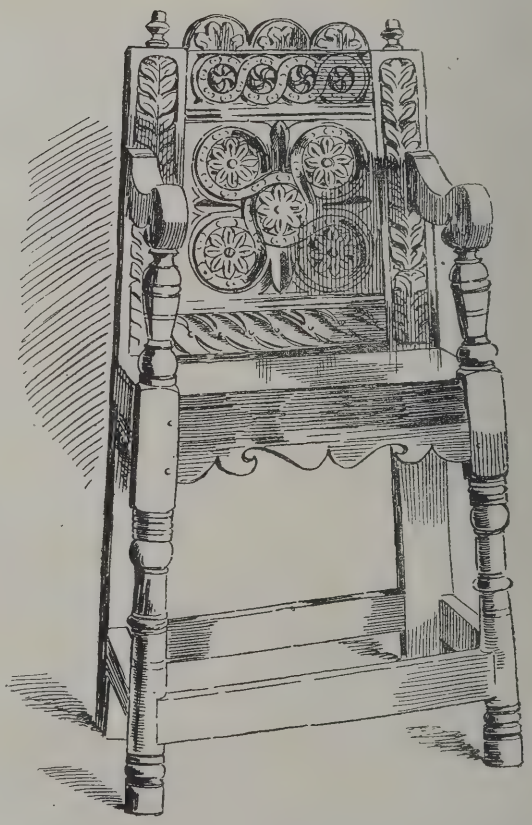
Oak Arm Chair



High-back Chair



Child's Chair

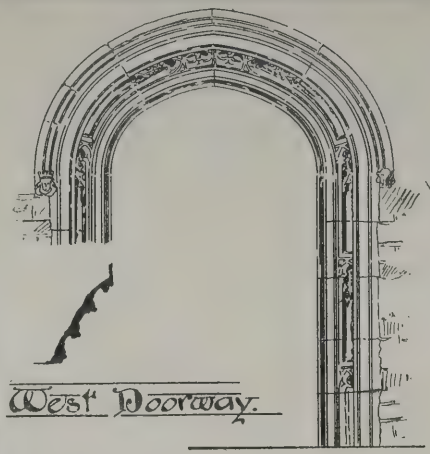


Carved Arm Chair

E. Chancellor, Sel.

Congresbury Church, Somersetshire.

Measured & Drawn by Wm Jane



West Doorway.

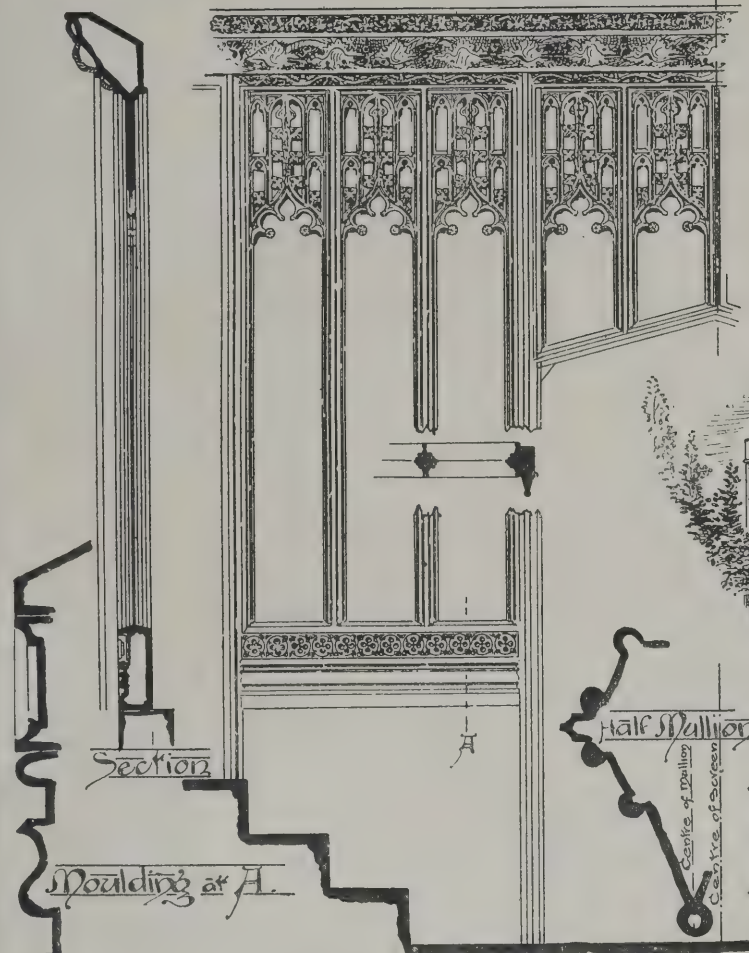


Piers & Arches North of Nave

Ins 12 0 1 2 3 4 5 6 7 8 9 10 Feet

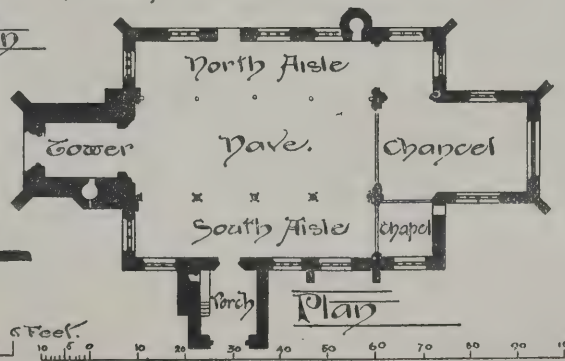


South East View.



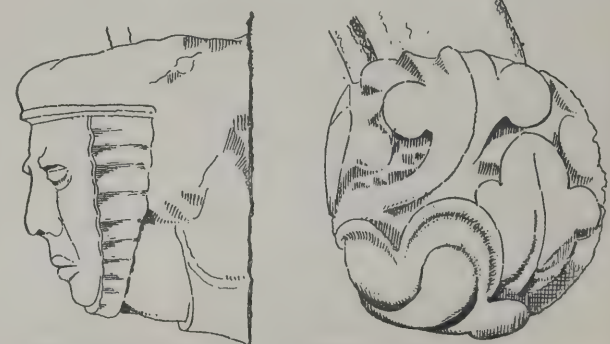
Part of Rood Screen

Ins 12 6 0 1 2 3 4 5 6 Feet.



Plan

10 5 0 10 20 30 40 50 60 70 80 90 100 Feet



Dripstones to Doorways.

WAYSIDE NOTES.

SIR THOMAS N. DEANE will receive the congratulations of the architectural profession for the honours conferred upon him at the opening of the Irish National Museum, his admirable Dublin work. A well-merited honour, as all will admit, and considering the sparseness that characterises the conferring of knighthood upon architects, an enviable one. It is, moreover, not often that the designer of a building, great or small, public or private, comes in for such appreciative notice as did Sir Thomas on Friday last, when Lord Zetland dwelt upon the merits of the building, built of Irish marble and stone by Irish workmen—a fact that seems to give no little satisfaction to Ireland, "including England, Scotland, and Wales." Home Rulers and Unionist have for once a subject for the exchange of mutual congratulations.

And it is, undoubtedly, a satisfactory aspect of the affair that the buildings are thus associated almost solely with local industry and talent. It is always a pleasing thing to lean that local industries and local men have been engaged on works, the principle exemplified being sound, and at the bottom of much human progress. The benefits of co-operation and concentration of energy are thereby obtained, whatever the doubtful science of "political economy" may have to say about the matter. Of course in these considerations I bar cases where competitions are "won" by local influence. Putting exceptions of this nature aside, there is every reason to be glad when we see work in town or country executed by men living and labouring therein. Every time work is given to outsiders and strangers, be they architects, contractors, or labourers, something is done towards pauperising and weakening the town thus acting, a fact I pointed out in regard to the working of stones in quarries far away from the buildings in whose walls they are destined to be incorporated, and a fact that I am never tired of pointing out as opportunity arises. To find that this waste of energy and money has been so studiously avoided in the capital city of Ireland—the Ireland of which we hear so much as to its poverty and lack of occupations for its people, and as to its decaying industries and general stagnation of business—is especially pleasing.

Reading the letter of your correspondent, the Vicar of Dagenham, *re* the scarcity of cottage accommodation in his district, I held it to be a moral certainty that the evening of the day of issue of the "B.N." containing his letter, would find a horde of the Buggins fraternity encamped on every available square yard of building land at Dagenham. I pictured to myself a veritable *blight* of jerry-builders, the air thickened with them, and the Essex highways and byways crowded with lumbering waggons bearing whole shiploads of R.C.I.J.'s—by which, I may explain, I mean rolled cinder-iron joists—of "shaky" fir joists and rafters, and unseasoned, ready-made sashes and doors, and ingredients, chiefly *road-scrapings*, for the preparation of that evil-looking mixture which by courtesy, and out of deference to district surveyors and surveyors to urban and rural sanitary authorities, Mr. B. calls "mortar." Building somewhat hastily on these premises—only, it seems, to be too quickly proved mere vain imaginings—I had hoped that some abatement in the shoddy-building fever might become instantly observable in the much-ravaged suburban districts of London. Vain hope, indeed; for Mr. Crosse's communication was a veritable wet-blanket. With its appearance the spirits of Buggins and Co. must have gone down to zero. The thought of the "several years" during which the ground of your correspondent, his client, has remained innocent of buildings, cottage or otherwise, must have acted like a freezing mixture.

For the encouragement of honest speculative builders, I must add, however, that it is my conviction that the S.E. district of Essex is not a bad place in which to look for a "spec." The Great Eastern Railway have recently pushed forward the construction of new branch lines of rail, opening up villages as centres of possible—nay, *certain*—residential districts. Houses of a small class, and cottages, are mostly required in these parts, and although my small knowledge of the village of Dagenham—confined to a rapid passing through on the occasion of a small archæological tour of inspection in that district some years back—does not enable me to reconcile the two letters you have received on this subject, I can yet believe that the Vicar of Dagenham is not abroad in his statement as to an existing want in his district.

If I were of the speculative building persuasion, I should make it my business to keep my weather-eye on the extension of railways round London, moving my base of operations to such places as were situate on advanced lines of rail. I would, indeed, had I to produce bread and cheese in the speculative building line of business, look ahead considerably, and get abreast of proposed new railways. But ninety-nine men out of one hundred are timid to essay or adventure. I have particularly noticed this with regard to building. It may be that some persons like to tack on to other people's work, feeling then more secure when the the winter winds howl about the 9in. walls that bear up the roofs so innocent of superfluous timbering and so utterly void of constructive principle. It may be that when Mr. B. is about to pay cash for a new plot of land (99 per cent. of the purchase-money remaining payable by instalments over a period of years), he looks more favourably upon that with a ready-made party-wall, even if he has to pay "through the nose" for it. Anyhow, readiness to discern the probable tide of events and their influence on values, and the balance of supply and demand, is not a prominent mental gift among the fraternity, or they would be building more in divers places around the Metropolis. For there are districts other than the S.E. of Essex that offer good chances; but having given one tip, I feel that I have been abundantly liberal in a matter where silence is golden—at least in the eyes of architect and artist and every well-ordered specimen of the genus *Homo*.

Emerson, in a beautiful passage, has spoken of the irrepressible force of Nature in covering with plant life the most hard, barren, and unsightly of artificial constructions, as where, in the paved street, the grasses penetrate through the crevices between the stones. It must appear a singular sight, illustrative of this unrestrainable plant life, to witness the ferns which, according to the *City Press*, have crowned a mass of debris on the floor of the ruined church of St. Mary Magdalen, Knightrider-street. Some three years ago the church was burned down, and since the fire the building has been left in a state of ruin and decay. Now, among the charred timbers and the barrenness of desolation, have arisen a luxuriant mass of ferns, which doubtless look all the more beautiful by contrast to their blackened, unlovely surroundings.

Considering the amount of writing got through in these days, one can but notice the fact that if good comes of the arguments put forward, the complaints made, and the shortcomings pointed out, it must be in a very gradual and unappreciable manner. It is something quite unusual for a newspaper correspondence to result in actual visible reform. But we have an instance. The sea-serpent season has been enlivened, or otherwise, by a discussion on sky-signs, and one of the most obtrusive of these is about to be removed from the Metropolitan horizon. In deference to expressions made in the public press, Messrs. Hudson Bros. have decided to remove the framework and letters set above their fine new premises in Ludgate Hill. This is very considerate of Messrs. Hudson, for I don't suppose they could have been compelled to remove the objectionable swinging signs. It would be as well if other parties could be induced to follow their example, and thus rid the London sky-lines of a very undesirable innovation.

The *A.A. Notes* for September are, as usual, full of good matter. The continued article on Sir William Chambers's letters will be read with interest, and students who have not read Street's R.A. lectures will find food for reflection in the matter to be printed in future numbers, as well as that in the present one, anent "The Study and Practice of the Art of Architecture." In the "Notes" within the *Notes*, reference is made to the future of district surveyors under the new conditions to come into force, and the change is very properly deplored. The question whether the church is best lighted by farthing dips or the electric light still forms subject of discussion and controversy. The management require suggestions as to next year's annual excursion, which is taking things commendably in good time. The neighbourhood of Shrewsbury is hinted at. Preceding the whole of the matter in the journal is an article on "The Past Session," genial and thoughtful in its nature, and alluding to the proposed changes in the Association. I fancy that the council of the A.A. will have less difficulty in making progress with the Educational Scheme in the next session. Whether they will be able to carry it through in exactly the original form is very doubtful; but the opposition caused by the attempt to deal with a large question in a hurry, and settle matters right off at the fag end of the session will be conspicuous by its absence in the coming session. Some, there may be, opposed tooth-and-nail to any change whatever; but persons looking beyond their own ends and interests, and having rather the welfare of the Association, as a whole, at heart, will now be at hand to help the cause of the reform.

Says the editorial article in *A.A. Notes*:—"The delay to some may appear vexatious; but good measures, like good wines, improve by keeping, and there is no reason to suppose that the result, when revealed during the coming session, will be other than advantageous to the Association, and beneficial to the future career of its members." This is just the spirit in which the matter should be viewed by every member. The delay should be regarded only as another opportunity for considering and perfecting plans for the future. Time will then probably show that it was well that the changes should be made in a deliberate manner, and not in a feverish haste that would surely have had its ill effects had the whole scheme been settled at quite the end of the session.

Members of our profession, when glancing over the dailies, are often amused with the vain struggles of the average reporter to master the technicalties of a new church or town hall he is attempting to describe when chronicling the stone-laying or opening ceremonies. His safest course is to bone or cadge the architect's report; but in his endeavour to reduce the dry terms to a language comprehended, as he imagines, of his readers, he often makes a sad hash of it. Only too frequently the architect is ignored. The "liner" generally credits the builder with the merit of the conception or restoration, and, while carefully giving the names of the clerk of works and foreman, omits all mention of the architect. Then, when the reporter has done his best with the subject, the compositor throws fresh light on the matter by ingenious misprints, and the reader or sub-editor falls into fresh traps in correcting the slips. Neither masters the elementary fact that the names of styles are "proper," and therefore deserve the distinction of capital letters. Even the *Standard*, a journal whose staff certainly ought to know better, in a big-gooseberry article of Wednesday's issue on the ignorance of archæologising tourists, asserts that the exploration of a district in the country offers "splendid opportunities for the display of one's erudition or one's ignorance, for discoursing on Norman arches, early English chantries, or perpendicular windows," the writer failing to see that he has availed himself of just such a splendid opportunity for the display of his own erudition, or ignorance.

GOTH.

The Mayor of Wycombe, Mr. Thomas Glenister, the first chair manufacturer who has occupied that position in the borough, last week invited all the employés, both male and female, connected with the chair trade to visit Wombwell's Menagerie, then exhibiting in the town. About 2,500 of them were admitted to the show at the expense of Mr. Glenister.

The restoration of Linkinhorn church is making progress under the direction of Messrs. Hine and Odgers, of Plymouth, the architects, and the work will be completed in October. In peeling off the lime wash from the south wall, portions of texts, in old black letters, surrounded by scrolls, were noticed, and below these again indications of coloured figures, and on a complete removal of these outer surfaces a life-size figure of our Lord was disclosed, with groups of smaller figures at each side and beneath His feet, representing the seven acts of mercy. The legends are all in English. The dispenser of mercy in every act (excepting the last, in which a priest with a tonsure appears) is a woman in the dress of an abbess. The date appears to be about 1380.

CONTEMPORARY BRITISH ARCHITECTS.*

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

THIS plate is the twentieth sheet of portraits of living British Architects. The first photograph is that of Mr. George Frederick Satchell, who was articled to the late Mr. William Wallen; subsequently he was two years with Messrs. W. G. and E. Habershon, and spent ten years in the architectural department of the late Sir Samuel Morton Peto's office. For the past twenty-one years he has been in practice with his present partner, Mr. R. Clarke Edwards, F.R.I.B.A., and in company with him, has carried out, amongst others, the following works: Churches at Green-lanes, Stoke Newington; Highgate-road; Mission church at Crowborough; Restoration of St. Andrew's, Barningham; All Saints, Hopton; St. Margaret's, Wattisfield; St. Matthew's, Leavenheath; St. John's, Isle of Dogs; Hirbury: Notting-hill; Gospel Oak; and Westminster Chapel. School-houses at Crowborough-cross; Gospel Oak; and Hendon. Houses at Barningham; Brondesbury; Carshalton; Crowborough; Edmonton; Hampton Wick; Hampstead; Henley-on-Thames; Kingston; Mill-hill; Richmond; Staines; also the new publishing and printing offices for the proprietors of *The Field*, *The Queen*, and *The Law Times* in Bream's Buildings, Chancery-lane, an illustration of which appeared in our issue of the August 8th last. Mr. Satchell's photograph was taken by Mr. R. H. Macey, of Rosslyn-hill, Hampstead.

The second portrait on the plate is that of Mr. Charles Henry Howell, F.R.I.B.A., the architect to the Lunacy Commissioners. Mr. Howell was elected an Associate of the Institute in 1848, and became a Fellow in 1861. His practice has been a very extensive one, and he has built several mansions, some of which we have illustrated. His principal works, however, have been large asylums, and such-like buildings; for example, within the past few weeks Mr. Howell has been appointed architect for the Surrey County Buildings, to be erected at Kingston—a work of great magnitude. He has been Surveyor of Public Works for the County of Surrey for many years, and also Surveyor to the Norwich Union Insurance Company. His portrait is by Mr. William Goodfellow, of Regent-street, W.

Mr. Peter Paul Pugin was born at the Grange, Ramsgate, on the 29th June, 1851, the Feast of SS. Peter and Paul, and a year before the death of his father, Augustus Welby Pugin. He was brought up in his brother's office, and had many opportunities of gaining practical knowledge on works in execution. On the death of his elder brother, Edward Welby Pugin, he went into partnership with his brother, Cuthbert Welby Pugin, and continued the practice under the name of Pugin and Pugin. In 1889 he had the honour of being made a Knight of the order of St. Sylvester, by his Holiness Leo XIII. Mr. Pugin's photograph is from Mr. Barraud's studio in Oxford-street, W. The following are a list of the more important works carried out by Pugin and Pugin:—Churches: St. Francis, Glasgow; Walton-de-Dale; Uttoxeter; Aber; St. Helen's, Kilburn; Atherstone; Dumfries; Roselands, Walmer; St. Margaret's, Glasgow; Carfin; Smythum, Lanark; St. Mary's, Liverpool; Swansea; Over Darwen; Mossend; Rotherwas; Bootle; St. David's, Cardiff; Fochabers; Edge Hill, Liverpool; Scarisbrick; English Martyrs, Preston; Linlithgow; Rutherglen; Leominster; St. Sylvester, Liverpool; Memorial Church to the late Duchess of Norfolk, St. Anne's-on-Sea; Franciscan Church, Upton, Forest Gate; Ford; Fort Augustus; Crewe; Paisley. Colleges and schools: St. Francis, Glasgow; Parliament Fields, Liverpool; Crosshill, Glasgow; Smyllum, Lanark; St. John's, Glasgow; Port Tennant, Swansea; Carstairs; Edge Hill, Liverpool; Clydebank; St. Peter's College, Glasgow; Dundee. Convents and monasteries: Fort Augustus; Belmont; Roselands, Walmer; Dumfries; Mayfield, Sussex; Ramsgate; Franciscan Monastery, Upton; Bartistree; Paisley; Stanbrook; Presbyteries: Walton-le-Dale, Tower Hill, Rockferry, Ormskirk, Kemsing Park, Mayfield, Cleland, St. Mary's, Liverpool; St. John's, Glasgow; Merthyr, Cardiff, Linlithgow, Rutherglen, Longton, Sheerness. Altars: Warrington, Walton-le-Dale, Belmont, Atherstone, Rockferry, Ormskirk, Longton, Roselands, Cleator, St. Margaret's, Glasgow; Mayfield, Sussex; Copperas Hill, Liverpool; Swansea, Ramsgate, St. Leonard's, Mossend, Hastings, Cardiff, Fochabers; Upton, Forest Gate; Edge Hill, Liverpool; Scarisbrick; Tamworth; Mark Cross, Sussex; Stafford Wolseley Hall; English Martyrs, Preston; St. Wilfrid's, Preston; Bolton, Rutherglen, Leominster, Paisley, Bournemouth, St. Alban's, Liverpool; Mount Carmel, Liverpool; Ushaw; Sacred Heart, Glasgow; Port Glasgow, Saltcoats, Springburn; Maryhill, Glasgow; Greenock, Broxburn, East Cambridge, U.S.A., Workington, West Gorton; Holy Cross, Liverpool. Alterations and additions: Sunbury, Johnston, Adelaide Cathedral, Gloucester Gate, Salford Cathedral; Hasilour Hall, Tamworth; Greenwich, Stafford, Lytham; Good Shepherd Convent, Hammersmith; St. Mary's, Horseferry-road; Brindle; St. Andrew's Cathedral, Glasgow; Margate, Blackwood, Anderton, Maryhill, Westby; Exhibition Hall, St. Cuthbert's College, Ushaw; Scarisbrick Hall; Eskadale, Birkenhead; Exhibition Hall, Oscott College, also Albion Club, Ramsgate; Almshouses, Bullingham; hall, Motherwell; stables, Blackheath; Ullathorne Memorial, &c.

Mr. Edward Robert Robson, F.S.A., architect to H.M. Education Department, was for some years architect to the Corporation of Liverpool, but is better known as the first architect of the London School Board. He was in partnership for a time with Mr. J. J. Stevenson, F.S.A., as mentioned when we gave that architect's portrait (BUILDING NEWS, Feb. 14, 1890). Mr. Robson's articles on "School Planning" appeared in our pages nearly twenty years ago, and subsequently were published in a book form under the title of "School Architecture," and became the standard work on the subject. Mr. Robson has frequently been engaged as professional assessor in architectural competitions, and his school buildings all over London are familiar to our readers. The following are some of the principal buildings erected by him:—The People's Palace for East London; Piccadilly Art Galleries and Prince's Hall; the New Gallery, Regent-street; White Hart Hotel, Windsor; Dunstable Grammar School; Wilson's Grammar School, Camberwell; High School for Girls, Blackheath; Firth College, Sheffield; Central Schools, Sheffield; School Board Offices, Sheffield; schools for the London School Board; St. John's School, Chester; Bow School, Durham; School Board Offices extension, London; house at Carswick Hill, Sheffield; another at Ranmoor, Sheffield; houses on the Bolingbroke Grove estate; Loftus Town-hall; Municipal Buildings, Liverpool; Queen Anne's Mansions extension, Westminster; St. James's Club extension, Piccadilly; Temple Chambers, Temple-avenue; Trosley Towers, Kent, for Sir Sydney Waterlow; house at Haslemere; restoration of Durham Cathedral; Christ Church, Luton; Church of St. Ann's, Liverpool; St. Cuthbert's Church, Durham; St. Mary's Church, Rainton; School Chapel, Blackheath; Luton and Belmont Vicarages. Mr. Robson's photograph is by Mr. Fall, of 10, Baker-street, W.

Mr. Frederic Chancellor, F.R.I.B.A., was born at Chelsea, articled to Mr. A. J. Hiscocks, one of the earliest Fellows of the Institute, and subsequently for some time was in the office of Mr. Ewan Christian. He gained the first prize in architecture at the University College, London, in 1844-45, then under Professor Donaldson. In 1848 he joined in partnership with the late Mr. Beadel and his son, Mr. Wm. Jas. Beadel, the present member of Parliament for Mid-Essex, conducting their architectural practice until 1860, when he commenced business on his own account in London. In early life he was much engaged in the erection of farm buildings, and was the first architect to carry out the system of covered yards, some thirty of which he has erected in different parts of the country. In 1851 he gained, in competition, the first place for the proposed new grammar school for the Trustees of Felsted Charity, and has continued to be their architect up to the present time, carrying out all their new school buildings, chapel, infirmary, and the works connected with them. He has also been very largely engaged in building banks. For the London and County Banking Company he has erected about forty new banks in London and the provinces, in addition to carrying out extensive alterations to many others. He has also erected many of the banks for private firms and companies, and four corn exchanges. His ecclesiastical experience has been extensive, having erected or restored fifty churches and numerous parsonage houses and schools. He has also erected and remodelled many private mansions, including Whilton Lodge, for Mr. J. A. Craven; Hanford House, for Mr. E. C. Ker-Seymer; Longmeads, for Mr. R. Woodhouse; Foliejon Park, for Mr. D. Blane; Dorwards, for Mr. H. Dixon, and the late Mr. O. E. Coope; Langtreys, for Mr. J. J. Tufnell; Hatfield Place, for Mr. W. M. Tufnell; and many others. He rebuilt the extensive works for Messrs. Ransome and Co., at Ipswich, and the factory of the Star Brush Company, at Holloway. In the City he has erected the Reliance Office, in King William-street; the Bank of British North America, in Clement's-lane; and numerous other offices and places of business. He has been architect and surveyor to the Coachmakers' Company since 1865, and has, during that period, rebuilt their hall and the whole of the business premises upon their property in the City. He has also been largely engaged in erecting buildings for the working classes both in London and the country—notably five large blocks of industrial buildings in Farringdon-road. In 1871 he was appointed one of the first diocesan surveyors for the see of Rochester, since transferred to that of St. Alban's, an appointment he still holds, having also been appointed diocesan architect upon the death of the late Mr. Joseph Clarke, F.S.A. He has taken an active part for upwards of 30 years in the sanitary arrangements of the town of Chelmsford, where he resides. From 1858 to 1865 he was town surveyor, and upon resigning this office he was elected chairman of the Sanitary Committee, and afterwards chairman of the Local Board, which appointment he held for many years, until it was superseded by the Charter incorporating the town. Upon this taking place he was elected the first mayor. He has also, since 1859, been connected with the volunteer movement, having passed through all the ranks of the service, and retiring in 1889 as Lt.-Col. of the 2nd Essex V.R.B. Mr. Chancellor was one of the founders of the Essex Archæological Society, and has contributed many papers to its meetings. He is now occupied in bringing out a very important work, "The Ancient Sepulchral Monuments of Essex," a work upon which he has been engaged for years, and which will be published this month. The portrait is from a photograph by Bassano, of Bond-street.

Mr. T. Chatfeild Clarke, F.R.I.B.A., and a Vice-President of the Surveyors' Institution, has throughout his career carried on a large general practice, not only as an architect, but as a surveyor, including the giving of evidence in various classes of cases, both relating to compensation and otherwise. He holds the appointment of surveyor to the Fishmongers' and Cordwainers' Companies and other estates. Many years since he took an interest in schemes for the better housing of the working classes, and at Walworth, Hoxton, and elsewhere has carried out blocks of buildings of this character. Among some of his larger works in the City of London, the Royal Bank of Scotland, in Bishopgate-street; the London and Lancashire Insurance Co.'s Offices, 66 and 67 Cornhill, 37, Leadenhall-street, 23, 24, and 25, Billiter-street; the National Branch Bank, Grosvenor-gardens; several sets of offices situated in Fenchurch-street, and large blocks of warehouses in St. Mary Axe, Bury-street, and various parts of the City, may be mentioned. Mr. Clarke has designed and carried out several large schools in London and the neighbourhood, the St. Mary Datchelor Schools at Camberwell; the Parmiter Schools in Approach-road, Victoria Park; the South Hornsey Elementary Schools; and similar schools at Crouch End, Highgate, and Little Titchfield-street; and he is now executing the Bishopsgate Girls' School, situated in Spital-square. In domestic architecture he has carried out large houses at Virginia Water; Hand Cross Park, Sussex; King's Ride, Ascot; Cuthedge, Essex, and many others. He has erected several waterside warehouses—for instance, the West Kent Wharf, Dublin Steam Wharf, Leith and Glasgow Wharf,

* We advise friends of those architects and others whose portraits have appeared to secure any copies they may desire of the issues in which they are published. We have not many left. We remind readers generally that the last half-yearly volume, containing as it does nearly 100 portraits and biographies of the leading architects, sculptors, decorators, builders, and art-workers, is a most valuable and interesting portrait gallery apart from its ordinary utility. It can be had, bound in cloth, price 12s.; but not many copies are bound up, and they should be secured at once.

and he is now erecting, in conjunction with his son, two wharves for the firm of Sir Andrew Lusk and Co. Among churches and chapels that have been erected by him may be mentioned the Devonshire-square Church; Unity Church, Islington; Esssex Church, Kensington; Westbourne Church, Emsworth; St. James's Church, Gunnersbury; and chapels at Eltham, Stratford, Mile End, Bermondsey, and other places. He has erected institutions for the Home for Little Boys at Farningham, the Hertfordshire Convalescent Home at St. Leonard's, and Working Men's Clubs and Missions in London and Birmingham. In recent years, several large blocks of buildings—assisted by his son—have been erected by him on the south side of Oxford-street, on the estate of the Duke of Westminster, and they are now known by the following numbers: 385, 387, 389, 391, 393, 395, 397, 461, 463, 465, 475, 477, 479, 481, 483, 485, and 487. In Bouverie-street, Fleet-street, the *Daily News* Printing, Publishing, and Editorial Offices, covering a large area, is one of his buildings, and Essex Hall, Essex-street, Strand, was converted by him from a chapel into a public hall, with large accommodation for committee rooms, &c. Other buildings erected by him are 25, Throgmorton-street, new buildings now in course of completion for Sir Reginald Hanson; 38, Great Tower-street, &c. Mr. Clarke has found time during a busy professional life, to devote himself to many schemes of social and moral reform, and has been interested, when on the Council of the Royal Institute of British Architects, and as a member of the Council of the Surveyors' Institute, in the advancement of schemes for examination for the promotion of the higher education of the profession; and he has taken an active part in the discussion of all questions relating to land reform, land transfer, leasehold tenure, and otherwise. His portrait is by Mr. Fall, of Baker-street, W.

ST. PAUL'S PREPARATORY SCHOOL, COLET HOUSE, WEST KENSINGTON.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

WHEN the Governors of St. Paul's School determined to erect new buildings in West Kensington, it was thought advisable to open a high-class preparatory school in the immediate neighbourhood where boys could be efficiently prepared for entrance into the new St. Paul's School. Colet House School was opened in January, 1881, with 6 pupils, but the number increased so rapidly that for the last few years at least 300 names have been on the books. As St. Paul's School rapidly filled, it became necessary to find a site on which a new preparatory school could be built to accommodate the increasing number of its pupils. Last year a plot of three acres, with a frontage of about 200ft., on the Hammersmith-road, immediately facing St. Paul's, was secured, and Mr. W. H. Spaull, F.R.I.B.A., of Oswestry, who has had considerable experience in school building, was asked to prepare plans for the proposed erection, and he accordingly designed the building in two blocks—namely, a front building, comprising a dwelling-house and boarding establishment to accommodate sixty boarders, and a distinct school building in the rear to accommodate 400 day scholars. This latter building cannot fail to be of interest to all practical educationalists. It consists of a large central hall, 69ft. long and 38ft. broad, on three sides of which are class-rooms, with a head master's room, assistant master's room, book room, &c. On the first and second floors the class-rooms open into and communicate with the large hall by galleries running round three sides of it. There is a staircase at each end of the gallery, so that the boys can assemble in the central hall in the shortest period of time and with the least possible disorder. It is calculated that in case of alarm from any cause, the whole school of four hundred pupils, if seated at work in the class-rooms, could be transferred to the playground in about half a minute. The school building is without corridors and without passages—in fact, the head master, when seated at his desk on the platform, has a view of every class-room door. The whole of the ground floor is paved with wooden blocks, the central hall floor being laid in oak and jarrah wood. Two terra-cotta fireplaces are an observable feature in the large hall, the interiors of them being lined with Mr. J. C. Edwards's lustre tiles, and fitted with fire-dogs. Hot-water apparatus supplements the heat from these fireplaces. With the exception of this hall, the whole school is heated by open fires, Galton's patent grates being used in the class-rooms. In every class-room there is a separate flue fitted with a Boyle's ventilator to take off the foul air, so that these rooms will be free from the stuffiness usually pervading a schoolroom. Several of the class-rooms have been built in pairs, so that two rooms can readily be converted into one in case of unexpected absence of a master, or when otherwise necessary. This building, which will be opened on September 16, seems to be the nearest approach at present in existence to a perfect school building. In the boarding-house block the only interesting feature is the extra precaution taken to secure the safety of the boarders in case of fire. After consultation with the Fire Brigade authorities, it was determined to construct all the staircases of oak, as being the best fire-resisting material; but to make escape absolutely certain in case of fire, four separate staircases have been constructed in the boarding-house block. The contract for the building has been let to Messrs. Stephens, Bastow, and Co., of Bristol. The style of the front building is Domestic Gothic, with red terracotta dressings and red-brick facings, the former being from the works of J. C. Edwards, Ruabon. It may be an interesting fact to mention that the completeness of Colet House for the working purposes of a school is due to the fact that the architect simply endeavoured to carry out the wishes of a practical teacher. The existence of St. Paul's School and the Preparatory School side by side will be a great boon to the inhabitants of the West-end of London, who prefer day-school life for their sons, as it is now possible for a boy to receive a systematic education from the time he leaves the nursery until he is ready for the university or the army. Recent examinations show that four out of the six Paulines who recently passed for the Indian Civil Service, and twelve out of the twenty successful Pauline candidates in the Army Preliminary Examinations, received their early education in the Preparatory School. Mr. J. Bewsher, M.A., the head master, will be pleased to show the buildings at any time to architects or other gentlemen interested in school buildings.

WHICH *IS* THE LARGEST PARISH CHURCH IN ENGLAND?

IT has been recently claimed that St. Michael's, Coventry, was the largest parish church in England; but Mr. Lupson, the parish clerk of Great Yarmouth, has quickly taken up the cudgels on behalf of St. Nicholas's, Yarmouth. In this week's *Guardian* he says:—

"An attempt has lately been made with much assurance to deprive St. Nicholas's, Great Yarmouth, of its renown; but it will not do, and the statement must be contested that has gone forth from St. Michael's Vicarage, Coventry, and recently copied into various newspapers, to the effect that the glorious church of that parish is, in respect of area, the premier parish church of the land, being 293¾ft. long and 127ft. wide in its broadest part, and that its present area, including the tower, is 24,015 superficial feet, 'thus making it the largest parish church in England; St. Nicholas's, Great Yarmouth, coming next with an area of 23,265 superficial feet.'

"St. Nicholas's, Great Yarmouth, is perfectly contented with and glories in possessing 23,265 superficial feet, and by them still claims to be respected by all men as being truly the largest of the strictly parish churches in England.

"In the work published by the writer eight years ago (now out of print), giving the history of St. Nicholas's Church, the following footnote explanatory of some remarks respecting St. Michael's Church appears, page 13:—

"'In a descriptive guide to St. Michael's it length was stated to be 293¾ft. and its breadth 127ft. As this statement was at variance with Sir E. Beckett's statistics, he was communicated with, and the following is a copy of his reply:—"St. Michael's, Coventry, is 280ft. long inside, including the tower, but that is only open to the church by a small door. Without the tower it is 252, as given in my list formerly published. I took this from a plan lent me by Sir G. Scott, who restored the church."'

"The list referred to in this note gives the area of many cathedrals and large churches, and states that the area of St. Michael's (without the tower) is 22,080sq.ft. The tower has recently been opened to the church by the formation of an arch, so that its area may now very properly be included in statistics given of the building. Making Sir E. Beckett's statement the basis of our calculation, the tower appears to contain about 784 superficial feet; these, if correct, being added to the 22,080, bring the total area not to the 24,015sq.ft. that are now claimed, but only to 22,864. St. Michael's tower is certainly a magnificent one; but it is not strong enough to bear the weight of its own bells, nor is it large enough to bid St. Nicholas's, Great Yarmouth, to 'come next.'

"Please permit me to mention that at the present time two portions of St. Nicholas's Church are in the hands of workmen, who are engaged in restoration work that will entail an expenditure of about £3,000. Here there is an excellent opportunity afforded the 'faithful in the land' to offer willing aid in rescuing from time's destructive hand the largest of the 'grey old churches' we have inherited from our forefathers."

SOCIETY OF ESTATE CLERKS OF WORKS.

THE above society, which has now been established two years, held its first meeting out of London at the Globe Hotel, Plymouth, on August 26th, when the report stated that the assets of the society were considerably over the liabilities, and that the number of members was now 68, and of honorary members 92, a total of 160. On the following day an excursion was made to Membland, the seat of Lord Revelstoke, his lordship providing a steamer to convey the visitors to and from Plymouth, conveyances to take them the nine miles of magnificent private drives along the cliffs, and on their return a luncheon of a *recherché* character, Mr. Adams, the agent of the estate, presiding. Mr. Adams, in a few brief remarks, stated that in his opinion moral support should be given the society by agents and others interested in landed estates joining as honorary members, as himself and Lord Revelstoke had done. Mr. Chapple, of Plymouth, eulogised the way in which Lord Revelstoke supported local interests, promoted the welfare of the neighbourhood, and lent a helping hand where help was needed. Mr. Crosbie, the clerk of works on the Membland estate, and Mr. Lavers, holding a similar position on an adjoining estate, conducted the party. On the following day a visit was made to Mount Edgcumbe, Mr. Perkins, Earl Mount-Edgcumbe's clerk of works, accompanying the visitors in a drive round the island, from many points of which some splendid views are to be obtained. Afterwards the more interesting portions of the ancient mansion were visited and described. The first provincial meeting of the society was a decided success, members coming to join therein from so far distant as Yorkshire, Cheshire, and several of the Midland Counties.

CRIB FOUNDATIONS.

FOR the foundation of bridges and other structures under water, a timber crib is often sunk by excavating the material through openings, and thus causing the crib to sink. One of the most important instances of a crib foundation is that of the Poughkeepsie Bridge over the Hudson. The four river piers rest on cribs, the largest of which is 100ft. long by 60ft. wide at the bottom, and 40ft. at the top, and 104ft. in height. Baker, in his recent work on Masonry, describes the construction. It is divided by one longitudinal and six transverse walls into fourteen compartments, through which the dredge worked. The side and division-walls terminate at the bottom by a 12in. by 12in. oak stick, which served as a cutting edge. The exterior and longitudinal walls are solid, of triangular cross-section for 20ft. above the cutting edge, above which they were hollow. The gravel used to sink the crib was deposited in these hollow walls. The walls were tied to each other by the end and cross division walls, and each course of timber was fastened to the one below by inch-size bolts 30in. long. The timber is hemlock, 12in. square. The fourteen compartments in which the clam-shell dredges worked were 10 by 12ft. in the clear. The cribs were kept level while sinking by excavating from first one and then the other of the compartments. Gravel was added to the pockets as the crib sank. When the hard bottom was reached, the dredging pockets

were filled with concrete deposited under water from boxes holding a cubic yard each, and opened at the bottom by a latch and hip line. After the crib was in position the masonry was commenced in a floating caisson, which rested on the top of crib. Sometimes iron cylinders are sunk by dredging the material from the inside by an "excavator." The clam-shell dredge consists of two halves of a hemispherical shell which rotate; the shell descends by its weight into the soil, and in raising it the pull of the chain closes the two jaws and forms a bucket inclosing the material to be removed.

BOOKS RECEIVED.

Structural Mechanics, by R. M. PARKINSON, Assoc.M.I.C.E., is a small, well printed, and useful treatise on the mechanics of structures. Mr. Parkinson has been to a certain extent successful in supplying the requirements of the student, leading him from elementary to complicated problems. The order of the chapters follows a natural sequence. Thus, the first chapter furnishes the student with data, such as weights of materials, effect of heat, resistance to tension and compression, loads on roofs, floors, and bridges; the next enters into the subject of simple strains in girders and framed structures, these being exemplified by graphical methods, moments, and the method of sections. Practical examples follow with answers for the use of students. The other chapters treat of more complex forces, such as strain out of centre, tubes, torsion, deflection, symmetrical and unsymmetrical beams of iron, steel, and wood, moment of inertia, the principles of arches, and short and long columns, each having examples appended. One advantage of the treatment to the student who desires to learn the subject in a practical manner, is the short and concise statement of general principles or propositions which are then explained or worked out by means of simple equations, trigonometry, and mechanics. For example, the author very shortly and clearly explains the simple strains in a girder. The usual method of taking moments about the ends of beam to show that the sum of the reactions is equal to the weight, and the moment of resistance of the section of beam are simply explained, so that the relation of leverage to resistance is apprehended without having to follow several pages of algebraic formulæ. Complex sections of girder are left for an after chapter, so that the student may acquire the elementary principles as he proceeds. The moment of resistance is next considered in relation to the position of the load. The effect of a distributed load is shown to be that half the weight acts at $\frac{l}{4}$ from each abutment, or $\frac{W}{2} \times \frac{l}{4} = s\text{M}$. The amount of moments can be shown by a diagram, and these diagrams are illustrated for different kinds of loading. The three methods of estimating strains—1st, by the graphic method; 2nd, by moments; and 3rd, by the method of sections—are explained in detail as applied to a roof truss, so that the student may thoroughly make himself master of each of these methods. We have no space to go further. Mr. Parkinson follows the same rule in the more advanced sections of his work. The diagrams are well selected, but the letters to them are rather too small to be read. This is certainly a pity. We can recommend the treatise as one of the best of its class.

The largest block of stone yet quarried is claimed to have been produced at Vinalhaven, Maine. It has been cut out by the Bodwell Granite Company, and is a shaft 115ft. long and 10ft. square at the base, and is estimated to weigh 850 tons. The company suggest that it would form an appropriate State monument to General Grant; but as yet the Maine Memorial Committee do not see matters in that light.

On Thursday, the 29th ult., at the town hall, Hastings, Mr. J. T. Harrison, an Inspector of the Local Government Board, held an inquiry into an application of the Town Council to borrow the sum of £2,252 for the lining and covering of the Halton reservoirs, £1,059 for the construction of a stone groyne at Eversfield-place, and £200 for works of sewerage in Silchester-road. The borough surveyor (Mr. P. Palmer) explained to the inspector the plans, and there was no opposition.

Building Intelligence.

ARMLEY, LEEDS.—Foundation stones of a new Baptist chapel were laid at Carr Crofts, Armley, on Saturday. It is being built in front of the former chapel, henceforth to be used as schools, from plans by Mr. Walter Henstock, of Batley, at a cost of £2,000. The chapel will be 60ft. by 40ft., and will have galleries. The seating on the ground floor will be semicircular. An aisle, 3ft. wide, will run on either side of the chapel. Immediately in front of the rostrum will be the Communion-table with baptistery sunk in the floor. By a special contrivance entrance will be effected to the baptistery from the two robing-rooms behind the rostrum, by going under the rostrum and direct into the baptistery. The organ chamber, which will be on the gallery floor level, will form a recess behind the rostrum, and will be 17ft. 6in. by 11ft. 4in. The walls will be constructed of Leeds red bricks, with ashlar dressings from the Gipton Wood Quarries. The style adopted is Classic, fully treated, and a small tower is provided in front. The whole of the internal woodwork will be of pitch pine varnished. The chapel will seat in all about 600 people. The chief contractors are as follows:—Mr. W. W. Haley, Bramley, bricklayer and mason's work; Messrs. Horshell and Heald, Ossett, carpenter and joiner's work.

BIRMINGHAM.—The shell of the new Post-office is now completed, and, with one exception, the whole is now roofed in. The hoarding will soon be taken down, and the building will be opened in January next. We illustrated the Post-office in our issues of June 8, Aug. 31, and Sept. 21, 1888. Mr. Henry Tanner is the architect, and Mr. Vickers, of Nottingham, the builder. His contract was upwards of £50,000, but the total cost of the buildings and fittings, exclusive of the land, will be between £65,000 and £70,000. The structure will accommodate a staff of about 900 persons, the postal, money-order, and telegraphs being all brought under the same roof. The two first-named departments will be in the front of the building towards New-street. The front hall will be about 80ft. by 60ft., and 21ft. from floor to ceiling; and the public will have the centre of the floor at their disposal, counters being arranged on all four sides. A statue of Sir Rowland Hill will be placed in the middle of the floor. On the floor above, the postmaster's office and offices for the chief clerk, the accountant clerk and his staff, will be situated. On a wing running along Hill-street the rooms in the sub-basement will be used for telegraph stores and for the pneumatic tubes. The parcel-post office will be the room above. This, as in all the other rooms in the administrative department, is lined with white glazed bricks. The letter-sorting room extends the whole length of the building, and is 207ft. by 45ft. The telegraph-instrument room, of like dimensions, will be on the top story. The top story on the Pinfold-street wing will be utilised for the storage of batteries, and below there will be offices for receiving night telegrams, a telegraph delivery room (25ft. by 30ft.), rooms for telegraph inspectors, linesmen, mail-cart men, and the telegraph engineer, and mechanics' offices. The building throughout will be lighted with electricity.

DUBLIN.—The new Science and Art Museum and National Library of Ireland, was formally opened on Friday by the Lord Lieutenant of Ireland, who conferred Knighthood on the architect of the buildings, Mr. Thomas Newenham Deane. The buildings cover the site of the Leinster House, and have cost about £120,000. The style is that of Sansovino's Library at Venice, and the departments include an art museum, a library for 800,000 books, school of art and lecture theatre seated for 500 persons. The arrangements of the collections in the museum is partly by subject and partly geographical. There are rooms and galleries devoted to textiles, wood-carving, glass, china, furniture, music, and others devoted to the arts and industries of Greece and Rome, Egypt and Assyria, India and Persia, and to those of the uncivilised nations of the world. Two rooms have been provided for the noble collection of antiquities made by the Royal Irish Academy. The museum also contains collections illustrative of the geology of the country. A large use has been made in the construction of Irish stones and marbles. We gave a portrait and biography of Sir T. N. Deane in our issue of Feb. 23 last, and illustrated the Museum on Oct. 31, Nov. 14 and 28, 1884.

EDINBURGH. — The new Free Church at Parson's Green, Edinburgh, the erection of which is just about to be proceeded with, will occupy the corner of Portobello-road and Willow-brae-road, Piershill. The designs, which have been prepared by Messrs. Sydney Mitchell and Wilson, Young-street, Edinburgh, show a building in the Decorated style, consisting of nave, aisles, transepts, and apse, with a square battlemented tower at the north-east corner, reaching to a height of about 70ft., and a slated spire rising from this tower to a further height of 40ft. The windows are mullioned with tracery. The principal entrance is towards the west, in a deeply-recessed porch, and in the vestibule a niche is provided for a bust of Mr. Smith, the founder. Interiorly the church is about 90ft. long, 40ft. wide, and it will seat about 500 persons. Underneath the church will be a hall measuring about 60ft. by about 20ft., together with session-house, ladies' room, lavatories, and heating chamber. The chamber, which will be constructed of Corncockle stone, will cost about £5,000.

PENZANCE.—The new swimming-baths, which have been in course of erection during the past year by the Penzance Public Baths Company at the western end of the Promenade, were opened a fortnight since by Mr. T. B. Bolitho, M.P. Mr. Oliver Caldwell, of Penzance, was the architect, and the contract was given to Messrs. Freeman, of Penryn. The bath itself is of concrete, and is 75ft. long by 28ft. wide. The wall next the sea is of granite. At the eastern end the depth of water is 7ft. 6in., and at the opposite end 3ft. 6in. It is filled by gravitation, the water flowing in when the tide rises, and being released when the tide is low. There are twenty-two dressing-boxes, and in the winter the water will be brought up to summer temperature by a heating apparatus.

CHIPS.

The Jubilee statue of the Queen, voted by the county of Worcester, and of which a foundation stone was laid by the Duke of Cambridge in August, 1887, will be inaugurated in Worcester in the present autumn. It is of white Carrara marble, and of more than full life-size, standing on the pedestal 23ft. above the ground level. The figure is by Mr. T. Brock, A.R.A., and her Majesty appears crowned and wearing a robe of State, holding in her right hand the sceptre, and in her left supporting the orb.

Several further additions are being made to the Mayor's Chapel, College-green, Bristol, which has just been restored, from plans by Mr. J. L. Pearson, R.A. The new north transept has a window of noble proportions, 22ft. by 14ft., which has been filled with stained glass at the cost of Sir Charles Wathen, the Mayor. It was designed by Mr. Pearson, and is Early Decorated in character; the subjects are incidents in the life of St. Mark, to whom the chapel is dedicated. A window in the north side of nave has been opened out, and is also filled with stained glass, at the expense of Sir Geo. Edwards, the subject being the Ascension. Both windows were executed by Mr. E. Horwood, of the Stained Glass Works, Frome Selwood, from designs by Mr. W. G. Bailey. A new brass lectern has also been given, 15th century in style. It has an octagonal base supported by four large claws, and the pillar is surmounted by a desk with open work. It was made by Messrs. J. W. Singer and Sons, Frome.

A new Liberal Club has been erected in Bermondsey, and special attention has been paid to the ventilation, the extraction of the vitiated air being effected by the latest improved form of Messrs. Robert Boyle and Sons' patent self-acting air-pump ventilator.

The unveiling of the monument to Victor Emanuel at Civita Vecchia took place last week. The statue is by Ettore Rudolfi, a pupil of the celebrated sculptor Monteverde. The figure of the king, leaning on his sword, is about 19ft. high. The base is of Baveno granite.

The inventory of the personal estate of the late Mr. Henry Kennedy, stoneware manufacturer, Glasgow, and Gardenside, Uddingston, amounts to £44,641 6s. 8d.

During the midsummer vacation much progress has been made with the internal fittings of the chapel which has been erected near the Queen's Schools at Eton College from Sir A. W. Blomfield's designs. The seats and wainscoting are of carved oak, and in accord with the style of the building, and a gallery is being constructed at the west end.

Engineering Notes.

LIVERPOOL OVERHEAD RAILWAY.—The Liverpool Engineering Society paid a visit on Saturday afternoon to the Overhead Railway now in course of erection along the line of docks. Over forty members were present, among them being Mr. H. H. West, president, and Mr. F. Huddleston, president-elect. The party examined the plant and machinery which have been erected at the north end of the railway for the purpose of heating, bending, and boring the flooring plates, all of which—and there will be thousands—are exactly alike. These plates are supported by the spans of iron that are placed along the outer edge of the erection, and which vary in length from 50ft. to 100ft. To place these great lengths of iron, weighing about 25 tons, in position, a specially patented gantry has been employed by Messrs. Ives and Barker, the contractors for the railway. This contrivance will project, lower, and fit a span in just over a quarter of an hour, and can be moved forward to repeat the operation in about the same time. The riveting of the spans, each one of which is sent along the viaduct ready to be dropped into its proper place, is done by Allen's pneumatic riveter, which inserts rivets at a rate of over 300 per hour. Progress at the rate of two, or even three, spans per day is being made. The permanent way is laid on longitudinal sleepers, as on the Metropolitan Railway. The engineers are Sir Douglas Fox, Mr. J. H. Greathead, and Mr. Francis Fox, resident engineer.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

DUNDEE INSTITUTE OF ARCHITECTURE, SCIENCE, AND ART.—A series of seven competitions have been arranged for next session, the prize in each case being of the value of two guineas. The subjects are, an Architectural Sketch and an Architectural Measured Drawing or Drawings. Both open to all apprentice architects in the counties of Forfar, Perth, and Fife; an Etching on Metal of any subject of an Architectural character; a series of not fewer than four photographs of any Architectural or Engineering subjects; a Modelled or Carved Original Design of an Architectural or Decorative subject in any material; and a Sketch in any medium, from an Antique subject in the Dundee Art Museum of Casts. All these four classes are open to any competitor in Forfar, Perth, or Fife. The last class is for an Architectural or Engineering Drawing, open to the three counties already named.

ARCHÆOLOGICAL.

SILCHESTER. — The explorations which are being carried out on the site of the Roman city of Silchester, Hants, under the personal direction of Mr. G. E. Fox, Mr. W. H. St. John Hope, Mr. Mills Stevenson, and Mr. W. K. Forster, of the Society of Antiquaries, are being attended, says a correspondent of the *Times*, with satisfactory results. Until the present work was commenced nothing was known of the great western gate of the city except its site; but the excavations have disclosed remains of this gate, under which passed the traffic along the main road through the Roman city. The roadway at the west gate was spanned by two arches. Among the massive fragments of the masonry uncovered is the impost of the gate, from which two arches sprang, and the mouldings on one side are cut away in order to allow the doors to shut against it. There are two guard-rooms on each side of the gate, those on the south being most perfect. The wall here has a thickness of 12ft., which decreases as it rises from the ground level, and it is backed by a great mound of earth. A paving of flints forms a pathway to the top of the mound. At the west gate a fragment of a fine Corinthian capital has been found, but it has no connection with the structure. Among the objects found on the site is a large strip of iron pierced with nail-holes, which evidently bound the bottom of a door of the gate. A portion of an iron pivot has also been unearthed. A house has been excavated, and traces have been found of another large house. Between the two houses there is a considerable area of open ground. During the excavations a large number of objects of antiquity have been unearthed.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

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The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLI., XLIX., L., LI., LIII., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

BUILDER. (We are not republishing them.)

RECEIVED.—R. H. W.—T. C. and Co.—F. M. R.—M. and M.—G. E. C.—S. S.—T. T.—F.—J. M.—H. and G.—W. R.—W. S. and Co.—C. K.—F. H.—J. W. R.—A. P. W.

Correspondence.

THE PROPOSED RE-BUILDING OF ST. CUTHBERT'S CHURCH, EDINBURGH.

To the Editor of the BUILDING NEWS.

SIR,—It may be well that the citizens of Edinburgh, and particularly those of the western district, should be appealed to (in the absence of other action) to guard the city's æsthetic reputation in this extraordinary matter, since it is they who are responsible for the good name and fair fame of their corner. It is they, therefore, who should be asked, in no uncertain way, to say whether they will suffer the time-hand of the dial of progress to be retarded or set back for a century by the carrying into effect of this rebuilding scheme.

The promoters have already been appealed to through the valuable medium of your columns to act as any enlightened "lord of the manor" would who is desirous of improving and beautifying his demesne, by choosing the greatest of competing gains for the city. To the citizens themselves three questions need only be put—namely: Would an enlightened landowner remorselessly shut up from his own and the public's starved gaze a beautiful and elevating prospect, when (to put it mildly) it was open to him not to do so? Would he be likely to build (much more rebuild) an ecclesiastical, or any other edifice "in a hole" if he was not compelled to do so? Would he altogether disregard the eloquent protest of environment when resolving upon such a course?

Possibly a superficial view of the immobility of countenance with which the public seems at present to contemplate the matter might lead to the hasty conclusion that the æsthetic horizon of the average citizen was bounded only by personal wants and necessities, suggesting almost the significance of the ancient interrogatory—"Is it nothing to you all ye that pass by?" One secret, however, of this indisposition to meddle with the matter is probably to be found in the answer returned to the writer by a member of the Cockburn Association (though not as such)—viz., "That Dr. MacGregor was resolute, and it would be little use to oppose him in it"—an opinion, flattering, no doubt, to the senior minister of St. Cuthbert's, to regard him as "a lion in the way"; for when contemplating what was practically an interdict of the re-building proceedings by the law court, he could only exclaim with unaffected resignation: "It was not so to be!" Undoubtedly something like a desire to "let brotherly love continue" is at the bottom of this feeling. Nevertheless, it falls to be weighed against a great and serious drawback—the sacrifice of the fairest part of the city to sectarian purblindness and fetishism; for if the æsthetic perception of the public is to be considered circumscribed because of undemonstrativeness on their part in regard to it, it is much more certain that, in a large number of instances, the citizen is merged, or entirely lost, in the sectary, to the city's great loss and detriment.

It has been said that the power which perceives in such matters is that essential faculty of our nature, the sense of the beautiful. This æsthetic perception, however, viewed in relation to the proposal, has several points of interest. It was reported, for example, of an eminent Scottish Ritualist, lately deceased, that he had "little or no sense of beauty, and hardly any appreciation of form, or colour, of architecture, or even of music." Not less suggestive (in one who possesses "the accomplishment of verse") was a certain ex-professor's laudation of the ritualistic practices of St. Cuthbert's, and the spectacle of the worthy professor straining at an unæsthetic (?) gnat in the middle of Princes-street (to him an æsthetic enormity), while evincing a wonderful capacity to swallow this proverbial camel at the western end of it.

But a graver instance still—because of the semi-official position taken—was the omission by the Cockburn Association of any reference to the subject in their report of July last, notwithstanding that a formal appeal was made to them upon it, and duly acknowledged by the secretary. Such an omission, without explanation, must have been regarded by many citizens with concern; while others may have wished for their withdrawal from a position which they appear to occupy before the citizens—in name only.

The local Press can scarcely be expected to settle corner controversies, yet who shall say it has not been a misfortune to the city that Argus, with all his hundred eyes, has been unable to see any æsthetic blunder or perpetration in this proposal? The *Scotsman's* daily vials are poured out regardless of the step. Its rival sees only shocking things in the desecration of the graves, though it went wonderful lengths in receiving to its correspondence columns certain contributions of the writer's on the æsthetics of the subject; yet, when invited to press home this important and vital part of the question, quietly declined. The *Evening Dispatch* showed a glimmering of morning light in March last, when it said: "It may be that the best thing they could do would be to remove to another site."

One other point fails to be noticed—viz.: The singular circumstance that there are those in the community who regard the writer's action in this matter as an uncalled for interference with private interests, &c. To such persons he will, of course, have little to urge that will be acceptable; but there is one distinguished example in our midst, already referred to, whose utterances are usually received with respect by the public, and by virtue of which any appeal made to him may be regarded as made to reason rather than to unreason. This citizen, after observing that "all excellence of every kind is a mean between too little and too much," is responsible for the following sentence (*vide Scotsman* August 13th):—

"Such is the constitution of things, that every good thing in excess becomes an evil, for two obvious reasons: first, because it becomes unmanageable, defying regulation and despising control; and, again, because in a various and complex social union of separate forces, which society means, no one force can put itself forward with exceptional potency without encroaching on the field and disturbing the action of some other equally legitimate force."

It is necessary to inquire of the author if, with all his powers of differentiation, he is able to strike the mean between the position of the promoters of this proposal, on the one hand, in persevering with it, and that of the writer, on the other, in denouncing it. Or if he is not rather compelled to own that he is face to face with two alternate propositions, one of which must be right, and the other, therefore, wrong. In a word, as far as his mean is concerned—

"That the difference is too nice,
Where ends the virtue, and begins the vice."

The word "force," as there used, calls for some definition, in so far as it is applicable to the sphere of human action. To include this rebuilding proposal under it, it follows that anything, however absurd, that is translatable from the abstract into the concrete is entitled to be called such; from the ball-play of the frolicsome child to the spent or bootless efforts of decrepitude. Stepping out of the field of human action into that of Nature, we find "exceptional potency" disturbing the action of "some other equally legitimate force," and the weaker going to the wall. Again passing into the supernal field, the force which "moves mountains" is a reality, and may have to be calculated with. In brief, it is to be feared, there is more in heaven and earth than is dreamt of in this sage's philosophy.

Another class of citizens less easily reasoned with are those who characterise such action as that of "a heaven-born reformer, who, with much fuss and fluster, sets himself and others the task of disarranging and rearranging all about him, and telling everybody else his duty." To such persons the writer can only reply that he is prepared for any responsibility which the position taken imposes, even to the extent of determining, if necessary, on which side the presumption may lie—whether on the part of the promoters in persevering with their proposal, or on his own in denouncing it.

These few additional observations, Mr. Editor, are offered at the present time, through the Rev. Dr. MacGregor having appealed, at Mid Calder, to the laity of the Established Church to come forward, on patriotic grounds, and take the Disestablishment question out of the hands of the clergy, adding that "if they did so they would find for it a very speedy and very satisfactory conclusion"; and also for another reason—viz., that this rebuilding proposal, which apparently is but a simple question of city æsthetics, may be something more—may even be symbolic of that larger controversy. The Rev. Dr. Scott, at same place, raised this two-fold reference in the following sentence: "They could not say," he said, "that the Church was assailed because it was decrepit or useless." Now, the following extract from the London *Daily Chronicle* of May last will show that there are at least two opinions upon that point; and inasmuch as "pictures are in the vision," this rebuilding proposal must be regarded as a substantial witness of the probable truth of the opposite contention to that of Dr. Scott's:—

"We favour Disestablishment in Scotland also, because the intellectual paralysis which is creeping over the Established Church clergy of Scotland suggests that the Scottish Established Church is dying under our eyes slowly, but surely, for lack of ideas. It is, in truth, falling out of the march of mankind, because it lags behind the rest of Protestant Christendom, floundering in a Serbonian bog of fossilised Calvinistic orthodoxy; mumbling a Confession of Faith that is antiquated and outworn, and offering as satisfying instruction to ardent minds the teaching of a school of Biblical criticism and theology that is almost prehistoric. Except in its pastoral relations, the Established Church of Scotland has ceased to be in touch with the life of the new generation, and it is not worth endowing as an agency of national culture and enlightenment." AUDI ALTERAM PARTEM.

THE BEST BRICK AND TILE KILN.

SIR,—Adverting to your issue of the 13th June, 1890, in which "The Best Brick and Tile Kiln" is described, I request that you will kindly induce the writer of the article to furnish the following particulars:—

1. How do the branch flues J J connect the several chambers with the main flue H? The sketch drawing is not clear on this point.

2. In the fifth par. it is stated, "To avoid the necessity of rounding the corners of the kiln, I place the passages S S S in the end of the division chamber, No. 6, and the passages S' S' S' in the corresponding wall of division or chamber 12." An elevation of one of these walls, showing the openings and a section through one of the passages, is required.

3. Also a longitudinal section of the kiln, showing the openings W W W, and the dimensions of the kiln, or the scale to which it is drawn.—I am, &c.,

HENRY IRWIN, C.I.E.,
Consulting Architect, Govt. of Madras.

COTTAGE PLANS HALF-SOVEREIGN EACH.

SIR,—I send you herewith a specimen of the sort of thing we have to put up with in this neighbourhood, cut from the *Hucknall Star*.—I am, &c., M. S. A.

Nottingham, Aug. 30.

COTTAGE.—Plans prepared to pass the Local Board at 10s. per House. ———, Architect, High Pavement, Sutton-in-Ashfield.

CHIPS.

Mrs. E. M. Barry, the widow of the late Professor Barry, R.A., died on Friday, aged 55 years.

A new *crèche* in Accommodation-road, East Leeds, was opened by the Duke of Newcastle on Saturday. The building is of red brick, from designs by Messrs. Kelly and Birchall, of Leeds, and has cost £2,500.

At the town hall, Eastbourne, on Friday, Mr. J. T. Harrison, C.E., Local Government Inspector, held an official inquiry in regard to the two loans, one for £3,300 for a new refuse destructor, and one for £500 for a scavenger and plant. Mr. Charles Tomes, borough surveyor, explained the proposals.

Langley New Church, which has been erected at a cost of £5,000, is approaching completion, and the Bishop of Worcester has fixed Thursday, October 30, as the day for the opening and consecration of the edifice. The church is to be dedicated to St. Michael and All Angels.

The memorial stones of a new Free Methodist chapel at Dosthill, near Tamworth, were laid on Friday. The chapel, which is being built by Messrs. Watton and Sons, of Tamworth, will accommodate about 120 persons.

A park has been presented to Jedburgh by Mr. John Tinline, who has returned to the borough from New Zealand. It is known as Allerby Well Park, and is 12½ acres in extent.

Some months back Sir Edward Watkin arranged to connect the port of Connah's Quay with his new Hawarden railway at the Dee Bridge, but from some cause the work was suspended. Operations have again commenced, and Mr. Johnson, the contractor, has put a great number of men on the work. The line will be a little over a mile in length.

A new Wesleyan Chapel was opened last week at Heworth, near York. It has been built from designs by Mr. E. Taylor, of Stonegate, York, and is Perpendicular in style. The chapel is of brick; the front of Scarborough yellow brick, with stone dressings. The chapel proper measures 44ft. by 24ft., whilst the schoolroom, on the right, is 22ft. by 15ft., and is separated from the chapel by a partition. Mr. T. Rawling was the builder, and the cost was £1,800.

The Methodist Free Church in Duke-street, Southport, has just been internally decorated at an expense of about £250, a new organ by Foster and Andrews, Hull, being erected, costing £700.

Mr. John O. Scott, F.S.A., is erecting a large porch and cloister to St. Mary Abbot's Church, Kensington, leading from the south-west doorway to the High-street. The building is being done by Mr. Thompson, of Peterborough. It is in stone, and harmonises with the church, which, for its tower and spire, ranks as one of Sir Gilbert Scott's best works.

The Midland Railway Company opened on Monday their Doe Lea extension line in Derbyshire. It is eight miles in length, and connects the Clowne and Teversal branches, thus forming another route from Chesterfield to Mansfield.

The Duke of Edinburgh will unveil the monument which has been erected by national subscription on Plymouth Hoe as a memorial of British worthies who took part in England's defence against the Spanish Armada. The monument, which has been erected from designs by Mr. Herbert A. K. Gribble, of London and Plymouth, and was illustrated in our issue of May 4, 1888, is now so nearly completed that the ceremony will take place during October.

Mr. T. E. Collcutt is the architect of the new branch building for the City Bank about to be erected on an important site on Ludgate Hill.

Intercommunication.

QUESTIONS.

[10362.] — **Fire-proof Floor.** — I am somewhat puzzled to know what is really a fire-proof floor. For a long time it has been stated that concrete is the best fire-resisting material, but now several patentees have adopted interlocking bricks, or terracotta, as the most suitable materials, merely employing concrete as a backing or core, presumably to strengthen or assist the former. I have seen a treatise or pamphlet written by Mr. Hyatt, in which he describes experiments made with concrete, which appear to settle the question entirely, to the effect that it will withstand almost any amount of heat. I also read that a fire-proof floor should be a solid mass, either of concrete or brick; but I noticed in the BUILDING NEWS a week or two since an advertisement of a new system of flooring which sets forth a claim for superiority because the floor is divided into sections with an air space between—which is right? And would concrete in floors expand, or contract, under excessive heat, or would they buckle or twist? And another point is, what about is the cost of concrete fire-proof floors compared with wood floors? Generally, what are the principles which should govern the construction of fire-proof floors, and what form of construction is the most economical in cost, efficiency considered?—F. T. S.

[10363.] — **Testing Lightning Conductors.** — I want to test with a galvanometer a lightning-conductor upon a country house; but as there are no gas or water mains at hand, I am at a loss to know how to make the earth connection with the test-wire. Would any of your readers kindly inform me how, under the circumstances, I am to find a good earth-pole so as to complete the circuit and ascertain the true resistance of conductor?—HERBERT PICK.

[10364.] — **Estimating.** — I should be pleased if anyone could inform me of a good textbook on this subject. One dealing with methods enabling quantities to be priced when the p.c. of materials and labour are known, without the aid of "price books." I have one such as I mean, "Estimating," published by Batsford in 1883, but think there must be one of a later date, and treating the matter rather more exhaustively.—T. W. C. E.

[10365.] — **Sanitary Inspectors' Examination.** — What books are the best to prepare for examination in sanitary inspection?—W. EVANS.

[10366.] — **Enforcing Completion of Contract.** — Where employer and builder have got across, and the latter is required to do certain minor matters to complete his department, but refuses, saying he has done enough, and the work to be executed, if done at all, will have to be carried out by someone else, even if charged against him; what course should be taken by the architect, who, after offering the proprietor two alternatives, either to give the contractor notice, that if he does not complete the work stated within so many days, he will employ someone else, and charge contractor with same; or deduct the items in getting out final account (according to schedule of prices.) The employer replies that the alternatives do not meet his wishes, as he is determined the work shall be completed according to contract by the contractor, and does not intend paying balance until it is certified complete by architect.—PERPLEXED.

[10367.] - **Strains in Roof.** — How are the strains in a framed structure, such as a roof, determined by the method of sections?—G.

[10368.] — **Portland Cement.** — Will some practical reader give a specification for Portland cement in which its fineness, tensile strength, and other qualities are stated? What are the tests?—CLERK OF WORKS.

[10369.] — **How to render Brick Walls Impervious.** — Is there any cheap solution for using over walls that admit wet? An answer will oblige.—A. L.

[10370.] — **Fences.** — Is there not a rule that directs how a wooden fence is to be put up between two owners? On which side of the rails should the hoarding or pales be placed?—IN DOUBT.

[10371.] — **Coulomb's Theory of Retaining Walls.** — Will any reader explain the nature of this theory?—ENGINEERING STUDENT.

REPLIES.

[10344.] — **Coke-Breeze Concrete.** — For lime coal read "lime core."—C. F. M.

[10350.] — **Spires: their Design.** — "Cyrus" should communicate with Messrs. Fambrini and Daniels, of Lincoln, as to his third question.—J. D.

[10352.] — **Modelling.** — "A. D. W." should write to "Modellers," 69, Canwick-road, Lincoln, who will supply the information he requires.—J. D.

[10354.] — **Steps to Chancel and Altar.** — Top step under altar should be 2ft. 9in. or 3ft., two next steps 2ft. 3in. each, room for passing takes from 3ft. 6in. to 4ft.; rail, if any, is best on a step centring about 6in. in from edge, kneeling step at least 18in. wide, communicants' platform 4ft. 6in. or 5ft., to admit of passing without disturbing kneelers. Three steps down to space between choir-stalls, and about four more to nave floor raises the number to 12, which at a rise of 6½in. places altar at sufficient height for dignity without sacrificing it by fussiness. Less dimensions than above render genuflection difficult without improprieties. Priest's knee should not scrunge the altar frontal, and his toe should not slip off the top step. The servers should not smash their knee on the edge of the footpace, or graze their insteps on the next step. Administrants should not be compelled to mount the next step to let assistants pass. Communicants should not be jostled or have their feet disturbed by passers-by. Where less room is allowed and more steps are introduced and deeper risers are provided, or overhanging treads, the apparent dignity may be discounted by positive inconvenience. To genuflect, the body should be vertical throughout the operation—the left knee being lowered to the ground beside the right ankle. Taller people require more room than shorter

ones for this; but where room is insufficient it is better to omit the step than to entail a lasting annoyance.—H. W.

[10359.]—**Intercepting Chamber.**—"Gordon's" about the best. Fix it in the area and carry up a shaft from same to the level of the back of footpath, finished with a conical top.—C. J. K., Acton.

[10359.]—**Intercepting Chamber.**—A "Young Architect" asks where is the best place in the front area of a house for placing "the intercepting chamber." He forgets to ask first, is an intercepting *chamber* really necessary? There ought to be an intercepting *trap* placed on the line of the drain in the area, but it is not always necessary to place this trap inside a chamber. In many cases, especially where the trap is only about 2½ft. deep or so, it is a pure waste of money to build a chamber round it. The money so spent would often be better laid out on some provision for simply ventilating the parlour or bedroom. The intercepting trap should be placed outside of the wall of the house with provision for access easily to it; but its fresh-air inlet may be some feet away from the trap as most suitable. The trap used should be one that will readily show any water falling into it when any sanitary appliance in the house is used. If a "Young Architect" has read Hellyer's and Buchan's books on plumbing and house-drainage, he should be able to choose the style of trap he wants.—W. P. BUCHAN.

STATUES, MEMORIALS, &c.

GLASGOW.—On the occasion of the annual official inspection of the parks on Wednesday week, the Doulton Fountain on the Green, and the Steven Fountain, in Cathedral-square, were inaugurated. The first-named fountain, which was formally presented by Sir Henry Doulton, has been erected midway between the Court-houses in Jail-square and Nelson's Monument. The whole is in terracotta, and for size and elaboration of treatment it is without precedent. The style is that of Francis I. The circle of the outer basin-rim is 70ft. in diameter, the pedestals, of which there are twenty four, making the total width still greater. On eight of the pedestals large vases are placed. Eighteen feet from the ground is a large basin curving out to a diameter of 22ft. Below this, within four main arches, are four large groups representing the Colonies, and between them, four intermediate niches, the openings of which are filled with tracery. Above this basin and supported on a terracotta structural dome rises a superstructure. Around the central shaft are four niches for statues, and bracketed out above them is a wide projecting cornice. Seated above this, in the divisions formed by four pierced screens, are four female figures, holding vases from which water is pouring. The screens terminate below an enriched pedestal which supports a statue of the Queen. The total height is 46ft. With the exception of the four figures pouring water, which are of a purely decorative character, the scheme of sculpture is arranged to represent the Empire. All the figures are above life-size. On the base of the fountain are modelled the arms of the city of Glasgow. The design and working drawings of the whole erection have been furnished by Mr. A. E. Pearce (designer to Doulton and Co.), and the modelling has been carried out by a staff of artists under the supervision of Mr. W. S. Frith. The fountain was originally erected at the Glasgow Exhibition, 1888.—The spray fountain which Messrs. M'Dowall, Steven and Co., of the Milton Iron Works, have presented to the city, was also a feature of the Glasgow Exhibition, and was handed over to the Lord Provost by Mr. Hugh Steven. It is 20ft. 3in. high, and 28ft. 6in. in diameter. There are three basins, the largest of which, cast in one piece, is enriched with carved work. The second basin is in the form of a gigantic shell; and the third is plainer than the others. The ground basin has a concrete bottom, and there are a couple of drinking fountains. The ornamentation over the whole erection is illustrative of marine life, vegetable and animal. There are about 100 jets, which are fed by taps from the outside.

Mr. F. W. Hunt, of York-place, W., is the architect of a new branch bank at High-street, Kensington, for the London and Westminster Bank. Mr. B. E. Nightingale is the builder.

After enlargement of the Wesleyan Chapel at Mansfield it was reopened on Sunday. The alterations consist of taking into the chapel the vestries at the rear and removing the organ, and accommodation is now provided for 1,000 persons. The work has been carried out by Mr. William Eaton, of Derby, from plans prepared by Mr. John Wills, at a cost of about £700.

The Whitwell Steam Sawmills, Whitwell-road, Plaistow, owned by Messrs. Matheson and Co., timber merchants and builders, were gutted by fire on Friday. The workshops and sawmills and a large zinc shed were totally destroyed. The damage is estimated at £2,000.

Sir Frederick Abel, the President of the British Association for the year, in his inaugural address at Leeds on Wednesday evening, said the greatest strides made by science since the Association last met in Leeds in 1858, had been in electricity, and sketched the more recent developments and applications of that agent.

LEGAL INTELLIGENCE.

RE F. G. HELMORE.—A first meeting was held last week, the bankrupt being described as late of Paternoster-row, and elsewhere, surveyor. He returns his liabilities at £1,749, and estimates that he has a surplus of £1,340. It appears that the debtor previously failed about nine years since, and obtained his discharge; he has since been engaged in other occupations, and has no fixed employment at the present time. He has also been a coal and tea dealer and a solicitor's clerk, and has carried on a Home for Waifs and Strays, which, however, was stopped by the Charity Organisation Society. The resolution was passed, and the Official Receiver will wind up the proceedings.

WHAT IS A BUILDING?—A case of interest to builders and advertisement contractors was heard at the Sunderland Police-court last week, which arose under the Sunderland By-Laws. Latterly, a company, known as the Sunderland Advertising Company, have erected hoardings in various parts of the town, which are now covered with tradesmen's posters, and William Carter Slaughter, manager for the company, was charged with having erected a new wooden building contrary to the Borough by-laws, as a test case. The town clerk, Mr. Bowey, said the erection in question was at the north end of Toward-road, adjoining the Victoria Hall. It was from 13ft. to 19ft. high, and externally was used for advertising purposes, and internally as a joiner's shop. There was no roof, but he did not think it could be contended that an erection was not a building because it had no roof. Similar constructions had been erected in other parts of the town. Mr. Taylor, surveyor, said that each side of the building was 66¼ft. long. Before the date of the alleged offence there was a fence of about 7ft. high round the space where the present erections now stood. No plans were submitted to the Corporation for the building. Cross examined: The previous wooden walls were used as an advertising station. Bills were posted on the east side. In some parts 5ft. and in others 11ft. had been added to the old fence. The shed which was now used as an office was there before, and the place was used as a stonemason's yard. For the defence, Mr. Strachan contended that this was not a building; and, secondly, if it was a building, it was not a new building. His clients felt that they must resist this action, because it was only one building out of a number. Walls, roofs, and chimneys were required for a building, and this had neither roof, chimney, nor floors. He contended that plans were not required for this erection. It had never been decided yet that a wall was a building by any court. He thought that this erection could not by any stretch be termed a building. The town clerk contended that a wall was a building if it was erected higher than was necessary for a boundary wall. In reply to the Bench, Mr. Bowey said there was no fixed height for a boundary wall. Their Worships had to use their own judgment. Mr. Bowey said that for boundary walls the Corporation had plans put before them. After retiring, the magistrates said their decision was that the erection was a new building, and fined the defendant 10s. and costs. Notice of appeal was given.

CHARGE AGAINST A TOWN SURVEYOR.—Walter Horne, late town surveyor of Worthing, who was summarily dismissed by the Local Board a short time since, appeared at the police-court on Friday to answer two charges of feloniously stealing money belonging to his former employers, and was committed for trial to the Quarter Sessions and admitted to bail. It was the duty of the accused to prepare weekly wages-sheets, and to obtain a cheque for the gross amount and make the necessary disbursements. Evidence was given that on four occasions, only a portion of the cartage money was paid, the balance, about £36, being appropriated. The accused reserved his defence.

At a meeting of the Wedgwood Institute Committee on Monday, Messrs. Ford and Slater submitted plans for an enlargement of the building, at an estimated cost of £3,000. The plans, which were adopted by the committee include the provision of accommodation for technical classes.

A new Girls' Home has been erected at Forest Hill, and special attention has been paid to the ventilation, the extraction of the vitiated air being effected by the latest improved form of Messrs. Robert Boyle and Son's patent self-acting air-pump ventilators, and fresh air admitted by their improved air inlets.

At the Trades Union Congress on Wednesday, a resolution was passed, after much discussion, condemning the system of contracts by schedule adopted by the Government and other public bodies, as being conducive to low wages and other evils, and the Parliamentary Committee were instructed to obtain the insertion of a clause in all contracts prohibiting sub-letting and the giving of contracts to any firm which did not pay the recognised Union rate of wages of the respective localities.

WATER SUPPLY AND SANITARY MATTERS.

BRISTOL.—The works which have been in progress for the Bristol Water Company at Barrow, four miles from Bedminster Bridge, during the last four years will be completed in three months time. The new works comprise a storage reservoir, four filter beds, and a filtered water tank. The highest number of men engaged was 950; now there are only about 200 on the ground. The old Bridgwater Road ran almost through the centre of what will be the new reservoir, and its course has been diverted to the south for three-quarters of a mile. The storage capacity of the new reservoir will be 520 million gallons of water, and the deepest water will be 55ft. The water for this tank will come from Chewton Mendip, and a 30in. main has been laid for the purpose of carrying it. At Chelvey two wells are being sunk, and some of the water from them will also be pumped up into this reservoir. There are to be two 24in. mains from Barrow to the Victoria reservoirs at Clifton. One of them has been laid as far as Bristol Bridge, and connected with the main laid from Sherborne spring, near Chewton Mendip; the other has been laid a part of the distance only. The four new filter beds and the filtered water tank are complete. The cost of the filters has been about £30,000; the expenditure on the reservoir will be about £150,000. The engineers are Messrs. John Taylor and Sons, 27, Great George-street, Westminster, and the superintending engineer is Mr. George Gooch; the contractor is Mr. Thomas Oliver, of Horsham, Sussex.

CLONMEL WATERWORKS AND SEWERAGE.—The Town Council of Clonmel, in Ireland, lately advertised two separate open competitions for the best schemes for the waterworks and sewerage of the town. An eminent London engineer was engaged as assessor, and acting on his advice the committee have unanimously declared the schemes drawn out by Mr. W. H. Radford, C.E., Angle-row, Nottingham, to be the best in both competitions. The Town Council this week decided to carry out the waterworks at once, under Mr. Radford's superintendence. In the waterworks scheme Mr. Radford proposes to bring the water by gravitation from a mountain stream at Glenmorgan, having a watershed of 1,700 acres, the intake being situate about three miles from the town. The population to be supplied is 12,000, and the estimated cost of the engineering works is £11,000. In the sewerage scheme Mr. Radford proposes to lay new pipe sewers in every street, the sewage being brought down to the outfall works by gravitation. The estimated cost of the engineering works is £8,000.

THE DISPOSAL OF THE SEWAGE OF LONDON ON THE MAPLIN SANDS.—At the Sanitary Congress at Brighton on Thursday of last week, a paper was read on this subject by Mr. Richard T. Grantham, M.Inst.C.E., who proposed to reclaim a large proportion of the Maplin Sands, and to distribute the sewage of London over the reclaimed surface. He feared that if the chemicals now used did not sufficiently clarify the sewage, the discharge at Hole Haven would cause as great a nuisance to the river there as it had done higher up. He therefore proposed to conduct the sewage away to the Maplin Sands as more advantageous than the alternative of utilising it on Canvey Island, in being further removed from any seaside resort, being larger, and in course of time making an addition to the agricultural area of the country, instead of absorbing any part of it. The surplus excavation for the culvert would be utilised in forming the enbankments of the area of the Sands proposed to be reclaimed, which was estimated at 10,000 acres. The cost was estimated at £4,500,000 exclusive of purchase of land.

CHIPS.

The Duke of Clarence and Avondale has arranged to open the Liverpool Royal Infirmary, which has been erected from Mr. Waterhouse's designs at a cost of over £100,000, on Wednesday, the 29th of October next.

At the meeting of the Dundee Parochial Board on Tuesday, it was resolved to build a hospital for the sick poor on the ground behind the East Poorhouse. The hospital is to accommodate 300 persons, and the cost is estimated at £16,000.

At the Inverness Dean of Guild Court on Monday a warrant was granted for the erection of a new church for the Free North congregation in Bank-street, Inverness. The new building, which is to be erected from designs by Messrs. Ross and Macbeath, will cost £8,000, and will give accommodation to 2,000 worshippers.

Another of the windows on the south side of Emmanuel Church, Weston-super-Mare, has been filled with stained class. The subject is "Christ Walking on the Sea, and Peter Essaying to go to Him." The window has been executed by Messrs. Joseph Bell and Sons, of College Green, Bristol.

Our Office Table.

THE death has been announced of Mr. John Belcher, F.R.I.B.A., of 7, Brunswick-square, W., the senior member of the firm of J. and J. Belcher, of Adelaide-buildings, London Bridge. He was an uncompromising Classic architect, and had for many years a large practice in the centre of City offices and warehouses, and also country mansions. He had served on the council of the Institute, of which he became a Fellow in 1856, and was also for some time member of the Board of Examiners appointed under the provisions of the Metropolitan Building Act. Soon after being joined in partnership by his son, he relinquished active participation in work owing to the impaired state of his health, and retired just twenty years ago. He has passed away at the age of seventy-three.

MR. BANISTER FLETCHER, who recently succeeded Mr. Robert Kerr as Professor of Architecture at King's College, London, is endeavouring to form an architectural and building museum at that College. Casts are being made of good examples of Egyptian, Classic, Gothic, and Renaissance work, while specimens of building materials, sanitary appliances, and models are being brought together all labelled with the names of the manufacturers and prices affixed. The new session will be opened on Friday evening, Oct. 3rd, by a free public lecture, to be given by Prof. Fletcher, entitled "Architecture: the Pleasure Derived from its Study." In the corridor adjoining the lecture room the Worshipful Company of Carpenters are fitting up cases for the reception of models of roofs, floors, framing and joists, and for books, which will form a branch of their reference and lending library, now exhibited at their hall in London Wall. The Carpenters' Company are also spending £600 from Harben's Gift in building a room at King's College for the classes in wood-carving about to be conducted under their auspices by Messrs. Barnes, Curran, and Howard, all practical wood-carvers, and £150 in improvement to the carpenters' workshop at the College.

THREE important autumn exhibitions of pictures have been opened this week in Birmingham, Liverpool, and Manchester respectively. That in the first named city, organised as usual by the Royal Birmingham Society of Artists, and to which the public were admitted on Monday, is stronger in elements of popular attention than any previous display brought together there, many of the works having, as a matter of course, already been seen at Burlington House, in the Regent-street or Bond-street Galleries. A marsh landscape from Yarmouth, I.W., by Henry Moore; J. C. Hook's "Breakfast for the Porth"; E. A. Waterhouse's "Mariamne," hung at the Academy three years since; W. B. Richmond's dreamy composition, shown at the New Gallery this summer without a title, and now named "Venus and Anchises"; the "Sandah," by Hagnes Williams; and portraits by Luke Fildes and the Hon. John Collier of their wives, and that of Cardinal Manning by W. W. Ouless, are among the more prominent works. At the Walker Art Gallery, Liverpool, Frank Dicksee's "Redemption of Tannhäuser," Leighton's "Bath of Psyche," Collier's "Death of Cleopatra," and Albert Moore's "Moonlight" are the most conspicuous features recently seen at the Academy. Sir Arthur Clay's immense and glaring work, "The Court of Criminal Appeal," which we criticised in May last when on view at the Grosvenor; Solomon's "Hippolyte"; Herkomer's versatility is shown by a portrait and landscape; and among the rest Messrs. Stanhope Forbes, Alfred Parsons, and Anderson Hague are well represented. The large water-colour room has been hung with self-coloured sacking, with a frieze and dado of terracotta, and on this surface some of the principal pictures are arranged irregularly, with wide vacant spaces between. The Manchester Exhibition opened at the City Art Gallery on Tuesday, and is also a good show. Orchardson's picture of himself, painted for the Uffizi Gallery; Logsdail's "Lord Mayor's Show"; "A Poor Catch," by Napier Hemy; "The Youthful Jesus," by Holman Hunt; landscapes by Edwin Ellis, J. R. Reid, and David Murray; and portraits by Fildes (Mrs. Agnew), Wells, and Collier are the chief works.

THE Town Council of Edinburgh are economising the expenditure on the maintenance of streets. Last year ending in May the committee estimated they would require for their work a sum of £50,830. They actually spent a sum of £47,190, thus saving over £3,000. The committee estimate that for this year they will require £43,115, an amount showing a further reduction of expenditure of about £7,000. This reduction is due to a general retrenchment, especially that for the estimated work. While adjusting the estimates the committee authorised their convener, Councillor J. C. Dunlop, to adopt two new systems in the carrying out of their operations. Dissatisfaction having been caused by the use of sand foundations and gravel joints in the causewaying of the streets, a solid concrete foundation is now to be adopted, and is used in English and Continental towns. The other new system to be adopted is the paving of level streets with wood. The convener of the committee is greatly in favour of the use of wood, and the London system of paving with this material and concrete foundations and cement joints will be followed.

THE United Asbestos Company have received the following letter from the lessee of the Queen's Theatre, Manchester:—"You are aware, no doubt, that my theatre has just been destroyed by fire, which gave me a practical test of your Asbestos 'Victor' Metallic Fireproof Curtain, put in some time ago. Although for a long time the extent of the fire on one side of the curtain was so great that it must have been red-hot, it remained intact, and the stage was saved and the stage stock uninjured. Had it not been for the curtain, this part of the theatre would have been as big a wreck as the other." This was the first occasion on which a "Victor" metallic drop curtain has been severely and practically tested, and justifies the claim of the company as to its fireproof character.

CHIPS.

Tenders were laid before the Chelmsford Town Council on Wednesday week for painting the market pens. The highest was £65, and the lowest £21.

The Royal Infirmary, Wigan, is being warmed and ventilated by means of Shorland's patent Manchester grates, supplied by Mr. E. H. Shorland, of Manchester.

Mr. J. Powell, J.P., died at his residence, Westwood, Harrogate, on Friday. The deceased gentleman, who was in his 77th year, had carried on an extensive business as a land agent and surveyor. He was Past-President of the North of England Surveyors' Institute, and had been agent for the Roundell family for the neighbourhood of Ripley and Harrogate for over fifty years.

The reservoir by which the local board of Castleford supplies the town and district with water by gravitation was suddenly emptied on Monday, it is supposed by the percolation of the contents through the sandstone bottom into a disused colliery working. Fortunately it was possible to supply the neighbourhood with a direct service from the pumps, and also to connect, in case of necessity, should a fire break out, with the Wakefield mains.

On Friday special services were held in St. Matthew's parish church, Ipswich, to celebrate the unveiling of the new east window. The work has involved the putting in of new masonry, and the window is now a well-proportioned five-light structure, with tinted cathedral glass in four of the lights, and a stained-glass representation of Christ seated in glory in the centre. The stained-glass work was executed by Messrs. Ward and Hughes, London, whilst the masonry has been carried out by Mr. T. Thwaites, builder, Ipswich. The cost of the work was £125.

The town council of Plymouth have accepted tenders, amounting in all to £2,400, from two local firms of builders, for alterations to the Guildhall, in accordance with plans prepared by Messrs. Hine and Odgers, of Plymouth.

The town of Castle Douglas, N.B., is about to be sewered in accordance with plans prepared by Mr. James Barr, of West Regent-street, Glasgow. The local board have accepted for the execution of the work the tender of Mr. Pearson, of Kilmarnock, at £2,600, being the lowest of nine sent in, and £83 below Mr. Barr's estimate.

The Suffolk Institute of Archæology held their autumnal meeting in Ipswich on Wednesday week, when the Museum, Town Hall, and many of the churches were visited. On the following day the members united with the Essex Archæological Society in a joint meeting at Harwich and Dovercourt.

Trade News.

WAGES MOVEMENTS.

DUNDEE.—The masons are still on strike. At a meeting of the men it has been resolved that before they resumed work a written agreement must be drawn up and signed by representatives of the masters and men to the effect that the wages should be 7½d. an hour for hewers and 8d. an hour for builders, these rates to be paid till the 1st of April, 1891.

COVENTRY.—The strike has closed, the men having recommenced work on the understanding that the masters will refer the question of advance to arbitration.

HOUSE-PAINTERS' AND DECORATORS' GRIEVANCES.—A mass meeting, attended by some 4,000 persons, was held on Sunday afternoon in Hyde Park, in support of the House-Painters' and Decorators' London and Counties Trade Society, to arouse the painters and decorators to the need of combining, and also for the purpose of denouncing "the mischievous introduction of sweating by unprincipaled employers, which has reduced the trade to its present pitiable plight."

STROUD.—The carpenters and joiners of Stroud are taking preliminary steps to combination. There is just now considerable activity in the building trade of the district. New schools for boys, a school of art and museum, and a new hospital wing are in progress, or about to be commenced, and houses are going up in several quarters.

The town council of Stafford adopted on Tuesday plans for public baths prepared by the borough surveyor. The baths will be built near Green Bridge, and are estimated to cost £6,000.

Mr. C. J. Phipps, F.S.A., is the architect of the new Vaudeville Theatre rebuilding in the Strand, and Messrs. Hall, Beddall, and Co. are the contractors.

A pastoral staff was presented to the Bishop of St. Asaph, at the Diocesan Conference at Oswestry yesterday (Thursday). It is of silver gilt, jewelled and enamelled in parts. It bears the arms of the See, and an engraved inscription in Welsh.

The twin churches of St. Breage and St. Germoe, in West Cornwall, are undergoing restoration; the contractor for both being Mr. James Julian, of Truro. In the former church a coffin was discovered under the floor, which was shown by the inscription on the plate to be that of the Mrs. Margaret Godolphin eulogised in Evelyn's biography. An altar tomb is to be built over the grave, on which the epitaph and family arms will be reproduced.

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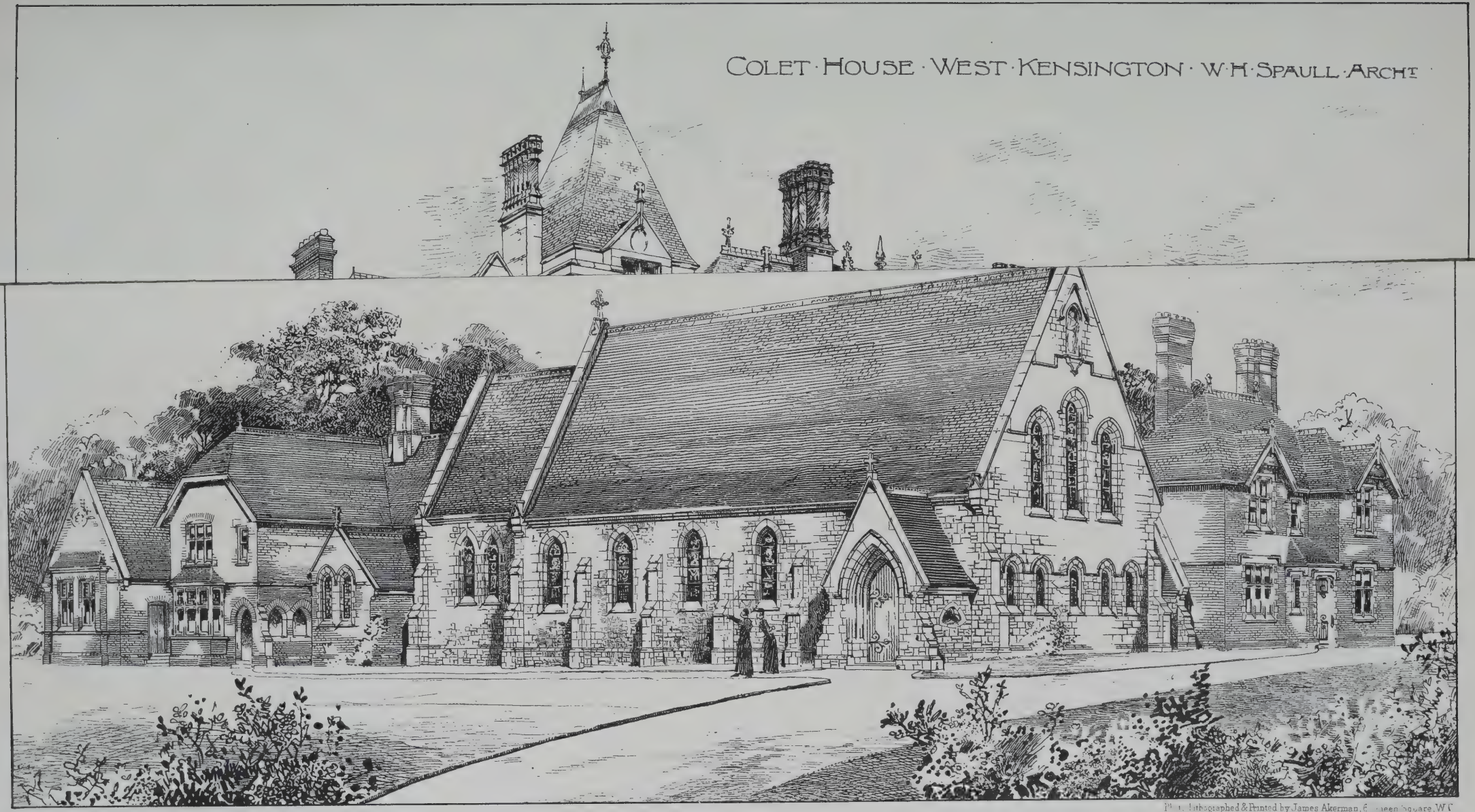

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OF THE POOR AND TO
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2000 DERBY (1888)
DONOVAN 3 YEARS
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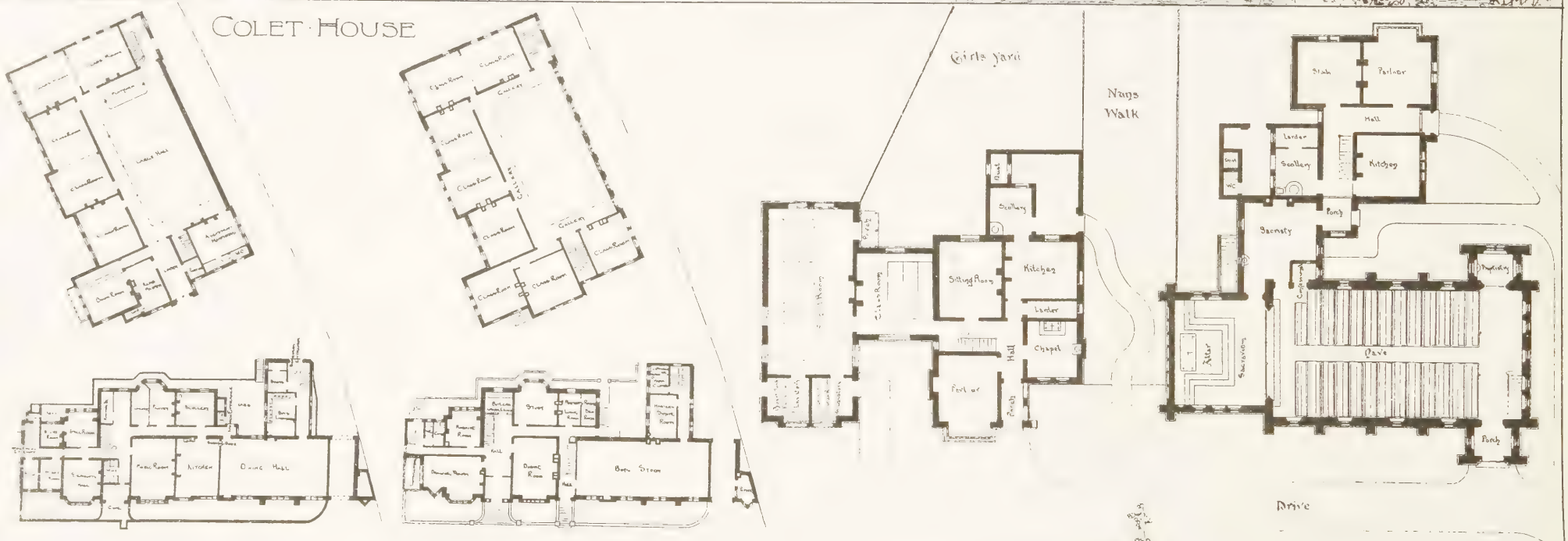
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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LIX.—No. 1862.
FRIDAY, SEPTEMBER 12, 1890.

SUB-CONTRACTING AND PIECE-WORK.

THE Trade Union Congress, which has been busy at Liverpool and has discussed a number of questions, appears not to have accomplished much in settling the disputes that at present divide masters and men. Protests have been made condemning the system of Government contracts, which are no doubt subversive of public interest and degrading to labour; the letting of large works to "sweating" firms, contracting by schedule, which conduces to cheap labour, sub-letting and other matters, but the speakers have in some of these cases been confounding their abuse with the things themselves. Take, for instance, sub-contracting. It was strongly objected to by the trade unions. Why? Because it encouraged piecework, and led to an unequal rate of wages. But does it not hold out to the able worker and craftsman a position which he cannot obtain in any other way? Those who protest against sub-contracting do so on the ground that the sub-contractor "searches all over the country for the swiftest hands, and pays them more than the proper rate of wages, thus leading other workmen, who are paid less, to scamp the work." But how can this inequality be avoided? We cannot bring men all to one dead-level of intelligence and productive skill. Sub-contracting has no doubt its weak side in the eyes of the general contractors, and the recent deputations from the London United Building Trades Committee to the Council of the Institute show how strongly the trades hold to the traditions. As our readers know, three propositions were then made. Architects were invited first to insert in the conditions of contract that the contractor is not to be allowed to sub-let any portion of the work; second, that all the labour employed is to be of the best quality; and, third, that the contractor shall not pay less than the recognised or trade-union rate of wages. The reasons why the contractor should not be allowed to sub-let are—(1) that employers and architects should retain their power under the terms of the contract, it being feared that the sub-contractor would be inclined to evade the specification and become responsible only to the contractor; (2) that inferior work would be tolerated. No doubt there has been some ground for these objections. A sub-contractor, unless bound by the same conditions as the contractor, might be tempted to introduce inferior material and labour, but there is no reason why he should be able to do so. The contract can make it compulsory that all underlet work should be subject to the specification, and be approved by the architect. It is only a matter of agreement. Sometimes the sub-contractor supplies both materials and labour; sometimes only the labour, but whichever he does, the architect has as much right to insist upon the proper carrying out of the work as he would have under the day-work system. The argument, then, against piecework is fallacious, and only holds good when sub-contracting is allowed to be carried on in contravention of the specification or contract.

If better skill or swifter hands can be obtained by sub-contract, why should not the employer obtain the advantage? Only the large contracting firms are able to employ picked hands in the several trades, and to keep them all the year round; the majority of builders are unable to do this, and when they take a contract are at a decided disadvantage unless the contractors employ tradesmen who are skilled in a particular trade. This is their only chance of competing with more wealthy competitors in the trade. The employer cares little if his work is skilfully done; the architect, too, has only this object in view. Why should they, therefore, object to a system which, under proper conditions, affords a guarantee of the performance of skilful workmanship? It seems to us that this is the upshot of the whole question. In an age of free trade a uniform rate of wage becomes an anomaly. If a specialist bricklayer can do his work quicker than another, and quite as skilfully, why should he not reap the advantage? In this trade piecework is often resorted to; the general contractor supplying the bricks and mortar. The work is done according to the specification, and under the supervision of the architect. The sub-contractor is a master bricklayer, who employs a number of hands. They are in "touch" with him, and can do the work quicker than many employed promiscuously under the foreman of a builder. He works with them constantly, and sees that no time is lost. Experience has shown that special work done under this plan is often superior to the average contract work. Overtime is made; the wage is often, therefore, more than that under day-work, and the contractor gets the benefit. Gauged work is frequently sub-let with decided advantage to all parties, as the contractor saves, the employer obtains good work, and the workmen earn better wages. And these results are due to specialism. The sub-contractor knows his particular branch of the trade so well that he has acquired a quick hand and eye, he knows where to get the expert hands, and the work is turned out quicker and better than if done by the ordinary craftsmen. Why should not the artist in brick, who can cut and carve it without unnecessary labour, obtain a higher wage than the ordinary brick-setter? But the unionist tradesman of average ability, who works in a groove, says he ought not to do so, as it is unfair to others of his craft. Why? Because the unionist cannot work so skilfully, or will not make extra hours. A superior position is won by even a bank or tradesman's clerk. Why should not the art craftsman have the same chance? No; of all workers he, by his own preferences and inclination, is not to have the opportunity of raising himself, but to remain at a certain level, receive a uniform wage, and remain loyal to his society. By agreeing to the rules of his union, he binds himself down to a certain *régime* and position. Trade-unionism is no doubt an advantage to the majority in the trade—the rank and file—because it assists them to uphold a given rate of wages; but its great function is that it promotes the welfare and thriftiness of its members. Inferior workmen are gainers, because they have everything to win by becoming members; on the other hand, the restrictions and rules are irksome to those in the trade who wish to reach the contractor's position, and who aspire to something above their fellows. Take masons' work. How many expert masons are desirous of winning their way to a higher position as a tradesman, and who would gladly undertake the stonework of a building as a sub-contract? Having more room and plant, a mason can do better work than the general contractor by employing ordinary masons. It is a convenience for both parties; but the condition that "no part of the contract is to be sub-let" deters this practical mason from getting small contracts. And is the same thing not seen among another important craft—that of the carpenter and joiner? Let us imagine a contract for a large building, a club-house or a mansion, in which high-class joinery is necessary. The general contractor is unable to keep employed a sufficient number of skilled joiners or specialists as staircase hands, or superior artistic joinery hands, to put on the building; but there are those who make it a trade to employ specialists and to turn out high-class joinery and moulded work. They employ such hands permanently, and have the facilities for executing ornamental staircases, interior doors, over doors, dadoes, chimneypieces, and overmantels. Surely it is to the advantage of an employer if he can obtain such workmanship; it is equally to the advantage of the contractor if he can sub-let this portion of the work. We need hardly say the architect prefers the handing over of artistic work to a specialist. The men employed to work for the specialist are paid the highest wages, and are regularly employed. We know, for example, what excellent doors, chimneypieces, staircases, and artistic joinery in the Queen Anne style were turned out in Mr. Norman Shaw's houses by the late Mr. Lascelles, who contracted for this portion of the work. In contracts for churches, both the late Sir G. G. Scott and Mr. Street arranged with sub-contractors for stone carving, church furniture and fittings, brasswork, and painted glass. Such special art workmanship as that required for a reredos, or for choir stalls and pulpit, could not be safely left in the hands of ordinary workmen to be done by daywork. We know, also, that the engineer, the founder, the plumber, the electric-lighting engineer, and the decorator have become specialists, and these branches of building contracts are generally sublet to firms who devote their whole time and attention to the work, and employ men who receive the highest wages. Would it be possible to get the work done so expeditiously or reasonably by a contractor employing miscellaneous hands? Only the great firms can employ their own master plumbers, engineers, and electricians; but even these would work under a disadvantage compared with firms who occupied their whole time in the work.

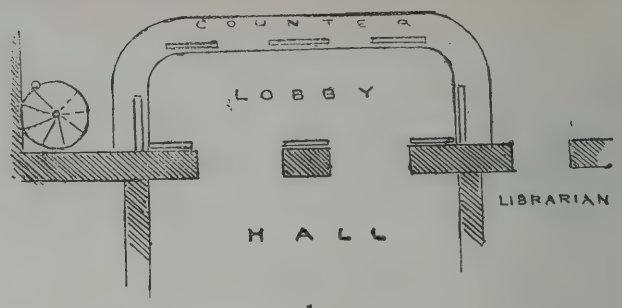
Employers and architects have at least to accept the inevitable. The whole tendency of trade is towards specialism, and if the best and cheapest labour is to be employed, sub-letting appears to be the only mode of securing it. A uniform daywork rate appears to be unjust towards special art craftsmen. The mass meeting held last Sunday week in Hyde Park by the London and Counties House Painters' and Decorators' Trade Society supplies us with an example. The speakers advocated a uniform rate of payment of 8½d. per hour for house painters, against which we have nothing to say; but if plain house painters are to be paid this rate for laying on four coats of colour and flatting, the decorative painter is certainly worth more for "graining" or "marbelling," and as the decorative art craftsman in painting deservedly ranks higher than he who merely imitates wood or marble, he should receive a still better rate of pay. We may ask, in conclusion, why it is that the modern contractor's work falls so far short artistically of the older craftsmanship. The reason is that in Mediæval and in the earlier work of the present century the trades were independent, and the system of separate contracts or piecework prevailed. Each craftsman was under the direct control of the architect, who undertook the part now occupied by the contractor in selecting tradesmen of skill to carry out the building. The control is now vested in the capitalist contractor, who ought certainly to have the right under a properly-prepared specification and contract to select fitting men.

FREE PUBLIC LIBRARIES.—IV.

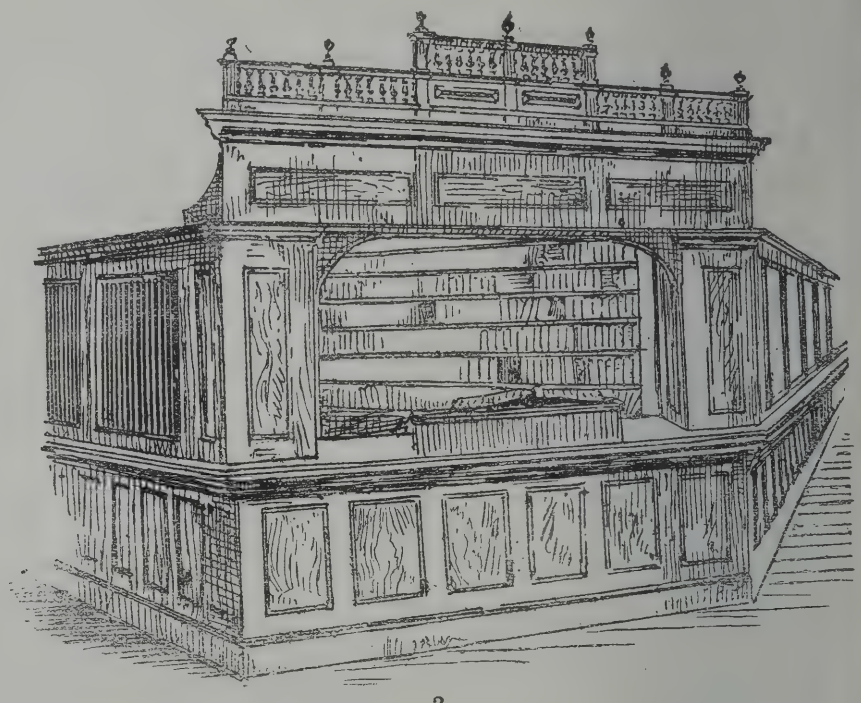
IN our last article (p. 138 ante) we discussed the requirements of the planning of libraries, and referred to the three systems

of shelving and stacking the books. We now intend to make a few remarks on the details and fitting-up of libraries. In the planning of reading rooms, the principal object to keep in view is the number and distribution of the tables. These may be placed with their ends to the windows and project transversely into the room, when the width of room is limited, or they may be placed, independently of the walls, in the centre of the room with a passage-way all round, which ought not to be less between the tables than 6ft., and at least 4ft. between the ends and the walls. These spaces will regulate the sizes of the tables, which may accommodate from four to five readers on each side. Opinions may vary as to the desirability of small or large tables: we should say a table that will seat eight or ten readers round it is quite large enough for convenience and comfort. According to one estimate, at least 2ft. of elbow-room should be given to each reader. At Wolverhampton the tables designed by Mr. Elliott, the librarian, are each 8ft. long, with sloping desks, the periodical being fixed in position by means of a brass rod down the centre of the paper, and its name is painted on a ridge which runs along the table. The arrangement prevents the removal of the journals; but for general readers this fixing is, to say the least, somewhat inconvenient. At Birmingham the circular-roofed reference library contains three rows of tables transversely arranged, each table having seats for five readers on each side. Two passages traverse the length of the room. The Clapham library (see plan 3, page 139) shows the tables disposed in the centre of each room, each table accommodating ten readers, five on each side, the ends of them arranged towards the bay windows, in each of which there is a hot-water coil. The news-room is 57ft. by 27ft., and will accommodate 150 persons, there being 8 large tables, each large enough for 10 or 12 readers. An allowance of 15sq.ft. of space to each reader is proposed for reading rooms, and this area will include the tables and chair space. Some propose tables 2ft. wide for a single row of readers, the tables being made to face the counter, or assistant librarian's desk. The considerations we have advanced are those which ought primarily to determine the arrangement and number of tables in a reading-room. It is stated by one authority that a table 10ft. long by 3ft. wide is a convenient size. We should say 3ft. 6in. would be a more convenient width for readers on both sides, especially in reference libraries. In the latter rooms, as notes and transcribing are often necessary, the tables should be convenient, and sloped desks would be a desirable addition for students.

After tables the arrangement and construction of newspaper stands requires attention. These ought to be placed in good light, and at distances from each other that will afford a free passage round, say, 6ft. 6in. or 7ft. from centre to centre. The unit in the determination of length should be an opened newspaper of the ordinary size; thus, if there are two newspapers on the stand, or slope, there should be at least 3ft. (taking the width of the pages of the *Times* as a guide), but in addition to the exact width of the newspaper laid open, there should be a margin of space between, say 9in. or a foot, in which case the stand would be about 8ft. long, for two newspapers on each sloped side. Many of the stands we have seen give 3ft. 9in. to each newspaper. The sloped desk with triangular ends should also be of sufficient height to take the newspaper or about 2ft. 6in. measured on the slant, and about 1ft. 8in. width of base. The desk is supported on standards resting on a foot-piece about 3ft. high. The importance of determining the dimensions of the stands is evident when we come to set them out economically, the spacing of the windows and, in fact, the size of the news-room must be regulated by the reading-desk, which should be placed at right-angles to the windows. Allowing the distance between we have mentioned, there will be sufficient passage-way between the readers of two stands. The windows ought not to be less than 4ft. 6in. from the floor, as this height is better for lighting, and prevents the habit of lounging and looking out of the windows. Indeed the higher they are the better. The magazine room requires tables, and these might be 3ft. wide and 6ft. apart, allowing 14ft. to each reader as about a fair area. Quoting Mr. Mountford's paper on book accommodation: "For the reference library and its stores, six volumes might be calculated to the lineal foot of shelving. For the lending library, eight volumes to the foot.



1



2

Mr. Robins says nine and ten books respectively. The height of cases being generally fixed at 8ft., and containing eight shelves, the requisite length for any given number of books might easily be calculated." In calculating the size of the reference library, the architect has to set apart the depth of a single bookcase round the walls, and a rail placed 3ft. in front of the shelves as a passage for the assistant. This lining of the walls with bookshelves to a total width of about 4ft. 4in. leaves the available area in the centre for the readers. All the wall space should be utilised by book-shelves for 7ft. to 8ft. in height; if there are aisles, they should be planned wide enough to admit each side to be backed by books, an aisle wide enough for two faces of books, but having only one side utilised by shelves is wasteful. All these book faces or shelves should be set out in pencil on the plan with their proper aisles or passages. No shelf should exceed 3ft. 6ft. in length without a support, nor be less than 8in. in width, as it is found that longer shelves bend under the weight of books, besides which, the infrequency of uprights or supports makes the task of storing and supporting the books irksome. On this account 30in. is considered a convenient length for a shelf.

We may next refer to counters and indicators. We have already shown the position of counters in the lending library. In plan they may be straight across the compartment, or room, or hall, or be curved inwards, so as to give a more convenient lobby for the public. Our plan 1 represents a lending library counter made to project into the room with return sides the whole width of the hall—a convenient plan that gives more frontage, and facilitates a keener super-

vision by the assistant. A height of 32in. and a width of 18in. to 20in., are the usual dimensions, though the top should be 2 wide if there are no indicators, and a fe inches higher. The form and size of t indicator used, and the amount of lendin of course, ought to determine the necessa length of counter. The counters have t usual flaps and wickets to allow the atten ants to pass to the outer side, and are fitt up on the inner side with shelves a drawers to suit the convenience of t librarian. The kind of indicator used w determine the fitting up of this part of t library. Several descriptions are in u We may here describe two forms employe The Elliot indicator is a square case frame divided into vertical columns, the bo numbers being arranged in them on sm pigeon-holes or shelves. When a book issued its number and date are written on t



CHIMNEY CORNER AND POLISHED IRON FIRE DOGS AT "THE HOLLIST ARMS" LODSWORTH. SUSSEX.

borrower's ticket, and placed on the shelf opposite the numbered space, where it remains till the book is returned. Thus the person can see at once by the ticket that the book is out. Its size is 3ft. square for every 1,000 volumes. The Cotgreave indicator is an iron frame fitted with shelves of the number of books recorded, a small metal-cased edger being placed on each shelf numbered at both ends in different colours, blue and red. When the blue end is turned toward the public the volume is in stock, if red the book is out. The indicator occupies a space of 1ft. 6in. for every 5,000 volumes. This form of indicator takes up little room on the counter, and has a means provided for detecting books which have been kept beyond the allowed time. Slides or clips are used to cover the numbers issued at certain periods, and these are denoted by different colours, so that the presence of a particular coloured slide remaining of the earlier period indicates that the book is overdue. Our sketch of the counter and indicator arrangement of the lending library at Darlington shows an example. The indicators should be arranged so as to allow ample counter space at intervals between them; and it is needless to say these arrangements can be varied to suit the form and length of the counter. The reference library counter ought to be at least 2ft. wide and 3ft. high. Other forms of indicators and details, bookcases, lighting, ventilation, and warming arrangements will be noticed in our next article.

OLD CHIMNEY-CORNER, LODSWORTH, SUSSEX.

THIS quaint old cottage chimney-corner, of which a sketch is herewith given, is an eminently typical one. The fire-dogs were made about 80 years ago, and were wrought by a blacksmith in the village. They are of polished iron, not steel, as mentioned on the sketch.

CECIL ALDIN.

NOTES FROM EDINBURGH.

THE summer months have been a season of much activity in the building trades in all parts of the city, happily unaccompanied by any disputes as to the rate of wages, and there are no indications of any number being unemployed. The mason work of the new Solicitors' Library, which is also an extension of the Advocates' Library, is nearly completed, and forms a very conspicuous feature in the long, dingy perspective of the Cowgate as seen from George IV. Bridge. From this point of view the better architectural detail, confined to the upper story, is more on a level with the eye, and the library, with its parapet and oriels facing the Cowgate, makes a very good appearance, and does much to improve the aspect of the ancient thoroughfare, which has no inviting look from either the higher or lower level. The Free Library, on the other side of the bridge, has also made a good riddance of some dilapidated buildings. Jeffrey-street, which sweeps round from the High-street to the North Bridge, is now all but completed, the ruinous building at the bridge end having been reconstructed, though with much less architectural detail. The original design appears to have been departed from, as there is an unseemly break in the proportionable size of the tenements about the centre of the street. The new University Hall and tower have reached the eaves-line level of the main building, and the National Portrait Gallery will soon be ready to receive the antiquarian museum. The new addition to the Morningside Asylum has made rapid progress, and will become one of the most conspicuous landmarks of the southern environs of the city, where its extensive frontage—all in red sandstone—stands pleasantly out against the thickly-wooded crest of the hill on which it stands.

No alterations of any note have been made this year in Princes-street or other well-known thoroughfares, unless it be the painting in white of the extensive frontage of the Balmoral Hotel, very much to the displeasure of Professor Blackie. The example is one not likely to be followed. This particular fad for painting sometimes has a good effect on shop fronts, and in small surfaces; but the experiment on a very large scale is, fortunately, an expensive one. It is difficult to divine the grounds for selecting white or black. The former soon shows its dirty face only to the passer-by, and the effect of black as a prevailing treatment may be seen in the funereal gloom of the Princes-street Arcade, where it absorbs much necessary light.

The controversy between the R.S. Academy and its critics has slumbered since the last rejoinder of the Academy, and the judgment of the Privy Council will be awaited with some curiosity. The last reply did not throw any further light on the subject, or make any new proposals. The fact remains that the Academy has ever been, only in name, an Academy of Architecture. If any suggestions can make it more so, it will probably, for lack of funds, be but little that can be done; and the Art Schools of the Board of Manufacturers and Heriot-Watt College do something now to meet the demand for some specific teaching as to architecture. Much more is to be hoped for from the movement, recently inaugurated, for the erection of a University Chair of Architecture. This has met with the unexceptionable support of the profession. Without public opinion being educated in some way to understand and appreciate what is really good architecture, and what is not architecture at all, or architecture of inartistic character, the R.S. Academy could do little good, and the task of creating a desire for, and general knowledge of, the ordinary principles of architecture must always be the work of some specially organised school or method of instruction. Probably more of this general knowledge was diffused when all architecture was supposed to be confined within

the sphere of the Five Orders. But, what with the general diffusion, by photography, of all sorts of foreign examples, and the complexity and confusion of existing specimens at home, and the notion that all such things are merely matters of taste, it seems hopeless to expect intelligent appreciation of architecture as an art to become general or popular as a study, without some special and scientific source of instruction, which only a Chair of Architecture can provide.

The letter on St. Cuthbert's Church, in the latest issue of the BUILDING NEWS, is a practical illustration. The author has mounted his stilts, and has amused, if he has not edified, its readers with its curious collocations of "lang nebbit" words. His only sensible and relevant remark is that in which he affirms the indifference of the public as to whether the church is to retain its position in its hole or migrate to a higher level. A building committee of ancient Greeks or Romans would doubtless have put their foot on any proposal to build a city temple in such a site. The work, meanwhile, is interdicted upon other grounds, and as there is no appeal to a public educated up to any sensible degree in matters architectural, the decision of the Court of Session will end the controversy. Much is to be said for restoration on the old site, and the fine spire, which looks better in the landscape than any one of its neighbours but the dome of St. George's, would be greatly missed. If the somewhat simple and severe style of the spire were made the key to the style of reconstruction, instead of more florid Renaissance, the church would look very well even in its hole—some considerable portion being at the level of the eye in Princes-street; but "sectarian blindness and fetishism" are in no way concerned, and the restoration of the church in a style now suited to the site will not be "the destruction of the fairest part of the city," and "Disestablishment" would rather seem to favour its removal, and the interesting quotation from the *Daily Chronicle*—which seems to know as little as the letter writer—of the respect in which the Shorter Catechism and Confession are held, will not rouse the citizens to interest themselves in the matter. It will be news to most people north of the Tweed that the clergy are afflicted with intellectual paralysis, or that modern enlightenment, which is avowedly agnostic, is better in any respect than a course of study directed by the Shorter Catechism, where the authors of both article and letter will find much useful information, and the latter a lesson in logical coherence.

The city authorities, who were severely criticised last year for their expenditure upon streets and paving, have been taking measures to reduce the estimates and improve the method. Wood pavement they consider best for level streets, and granite blocks laid on cement for others. Experience of redwood blocks has not been satisfactory here. In wet and wintry weather they get very slippery, and dirty under foot, and last no time under heavy traffic. But in the division of Princes-street where the hardwood blocks have been laid for about a year, there is quite contrary experience, and some promise of better durability. The objection to concrete under the stone setts is the aggravation of the noise, which is very bad, as many vehicles are but indifferently hung. No paving equals asphalte in durability. The pavement in the Kirkgate of Leith, laid 20 years ago, though disturbed in many places for pipes, &c., is as sound as ever. It is noiseless, and if its slipperiness had been very bad it would have been removed long ere now. Some further experiment should be made with this material.

The fruits of the recent expenditure in the way of providing recreation grounds are every year more apparent. The northern suburbs will soon be in possession of a large and fairly level park extending from the western side of the Arboretum to the Fettes College grounds. The Arboretum is much improved, and contains a large selection of oak, thorn, &c., and with the Botanical Gardens, as a sample of landscape gardening, could not be surpassed. Large stretches of turf, which on the north side is like velvet, afford splendid views of the city and the distant hills, and are fully appreciated by old and young. Already a considerable amount of building has begun to cover the ground of the old park recently taken for building speculation. This is mostly tenements and shops, for middle-class requirements. Several villas in the same quarter are erected. Large blocks of smaller tenements have been built in the north-eastern suburbs, and the advantages of the northern suburbs, with their proximity to the city and the service of the cable tramways, are likely to promote further extension of the city in this direction.

THE BAPTISTERIUM AND DOMTHURM, CREMONA, AND OSPEDALE MAGGIORE, MILAN.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

THESE two fine photographic illustrations are reproduced on a somewhat reduced scale, by permission, from a grand folio work just published by Herr von Ernst Wasmuth, the well-known and enterprising architectural publisher of Markgraffenstrasse, Berlin, under the comprehensive title of "Ziegelbauwerke des Mittelalters und der Renaissance in Italien," and the author of the book is Professor Heinrich Strack, of Berlin, who made a special survey of the buildings illustrated, and supervised the execution of the measured drawings prepared for his work. By far the larger number of the fifty plates thus brought together consist of these geometrical elevations and big scale details, all of which are delineated in a thoroughly practical and technical manner, carefully showing the jointings of the brickwork and terracotta enrichments which which the buildings are elaborated. Street's "Brick and Marble of the Middle Ages of North Italy," and Dr. Rowand Anderson's "Municipal, Commercial, and Street Architecture in Italy," have both in their way supplied some of the best and most reliable drawings yet published of the Mediæval buildings existing in that country, and of late years English architects have had the advantage of such books as Kinross's "Details of Italian Buildings, chiefly Renaissance," and Oakeshott's similar series of drawings, first published in our own pages when their author held the BUILDING NEWS Travelling Studentship a few years ago. The larger book before us is like neither of these works just mentioned, and it deals more especially with constructional ornamentation, as indicated by the title under the term of brickwork, some of which, however, is much earlier than the Renaissance period. Some Gothic examples are represented, such as the Palazzo Rocca-Salimbeni, Siena, with enlarged details; the Porta Ovile, the Porta Pispini, the Porta Romana, where the fresco of the Coronation of the Virgin by Taddeo Bartoli is shown to visitors; the Fonte Nuova, built in 1259, and the Fonte Branda, all in the same city. Added to these are more elaborate specimens still from the façades of the Palazzo Grotanelli—originally the Palace of the Captains of Justice, and now well restored by the late Sig. Rossi—and some houses and shops from the Via Ricasoli. Some highly characteristic details of Mediæval brickwork, too, are of course shown from the ancient town of San Gimignano, between Certaldo and Poggibonsi on the Siena railway, once one of the most prosperous places in Tuscany in the days of Dante, where the streets still carry us back to the Middle Ages. The Palazzo Pratelesi has some exceedingly refined details about it, and the proportions of its delicately cusped windows are specially pleasing. The circular tower of the Palazzo della Diavolo, Siena, with the pedimented chapel attached to the earlier main building are both here drawn most carefully, while the photograph accompanying the elevation shows the relative positions of the two buildings. From Pisa we have an example of early work subsequently added to in the Palazzo Agostini, now used as a café. Of church work, amongst other examples, we are presented with measured plates showing St. Anastasio at Lucca; then comes the famous porch from the Palazzo della Mercanzia or Loggia de' Mercanti, at the corner of the streets SS. Stefano and Castiglione at Bologna. It is a well-known and beautiful piece of work, said to have been erected in 1294, and was restored by Bentivogli in 1493. The Palazzo Fava, from the same town, is one of the most adaptable as well as remarkable instances of good brick treatment, which has frequently been copied in English modern erections. It is here shown in company with the similar buildings at Bologna, familiar as the Palazzo Pallavicini and the Casa Vecchietti. Bramantino's magnificent court in the Palazzo Bevilacqua Vincenzi at Bologna is also drawn here to a corresponding scale with key-plans in all cases and showing the enriched parts in a workmanlike and artistic style, admirably suited for the use of an architect and skilfully enlivened with shadows and washes reproduced by a permanent photo process. The Palazzo Tacconi, with the pedimented range of windows to the main story, should also be mentioned, as well as the Palazzo Malvasia not far off. Others are given from Imola, Forli, Ferrara, and the splendid work at the Palazzo dei Tribunali at Piacenza. The Certosa, near Pavia, of course supplies Prof. Strack with some grand and rich details, from the terracotta cloisters, which he shows by good photographic reproductions, and the plates which follow these are devoted to earlier work from Brescia and Cremona, such as the Palace of the Jurist Consults, now used as a school. From the latter city, we give a view representing the red-brick Campanile, or Torazzo, which has obtained for Cremona its architectural celebrity. It was begun in 1283 at the cost of the Guelphs, the partisans of the Pope, in celebration of the treaty of peace made between Cremona, Milan, Piacenza, and Brescia in that year. It is the highest tower in the north of Italy, measuring 396ft. high, and 498 steps lead to the summit, from whence fine views are obtained of the Milanese district, intersected by the Po. The bells were hung in this tower in 1518, at which time the octagonal cupola was added. The cathedral has much fine moulded brickwork in its grand transept fronts, and the interior is one mass of colouring and gilding. The Battisterio is in a simple Lombardic style, entirely of brick, and in the centre is a noble font hewn out of a solid block of marble. The tower is connected with the Duomo by a line of loggie.

Of the vast and particularly-fine brick structure, of which a detail photograph is herewith presented to our readers—viz., the Ospedale Maggiore, or Great Hospital of Milan—we have the following historical notes, which may be of interest in this place. Francesco Sforza and his duchess, Bianca, founded the institution in 1456, giving for its site an old palace once the property of Bernabo Visconti. The new building thus inaugurated was begun in 1457, the founder and his wife laying the first stone. They gave the commission to a Florentine architect named Antonio Filarte, and the southern part of the hospital was carried out from his designs. The centre of the building, erected in 1621, was from the plans of the architects Fabio Mangone and F. Richini. No less than nine courts are comprised within the confines of the institution, and the principal one is very extensive, and surrounded by double arcades of 21 bays. The ground plan is a perfect square, the central space being occupied by the grand quadrangle, which measures 215ft. by 239ft., beyond which dimensions are the colonnades, each 18ft. 6in. wide. The grand detail of the windows, elaborated as they are in moulded brickwork and modelled terracotta round their openings, with figures of boys and foliage, can be seen in the illustration. The niches contain busts of allegorical figures and saints, while the great frieze over the ground-floor arcade is exquisitely enriched with cherubs' heads and eagles, designed in a thoroughly Milanese style. The north wing, by Castelli, does not harmonise with the main building. It was erected early in the present century. The hospital is richly endowed, and has accommodation for 2,000 beds, some 20,000 patients being admitted annually. Among the other plates yet to be named in the book under review, we have to mention some good photographs of churches: Santa Michele, Cremona, and San Marco at Milan; Santa Maria in Strada, at Monza (a building famous for its ornate terracotta work and intricate rose window in the centre; its tower has of late years been completed, and the façade restored), and Santa Gottardo, Milan, with its graceful campanile, not far from the Cathedral there. The Cistercian Monastery, known as the Abbey of Chiaravalle, has also a remarkable octagonal belfry in the Lombardic style. The remainder of the monastic buildings are excessively plain, all the ornament being concentrated in this central tower. Some highly useful details are to be seen in the Renaissance work of the church of Santa Maria delle Grazie at Milan, in the Borgo delle Grazie, which leads to the Palazzo Vercellina. It was built on the site of a barrack, and a considerable part of the military buildings were converted into the Dominican convent adjoining; but the church was built afterwards, the first stone being laid in 1464. The Gothic church of Santa Lorenzo, Vicenza, figures in

EXPOSITION UNIVERSELLE DE 1889

Galeries des Expositions diverses.

Fermes surélevées de 15 mètres

N°42

From "Le Génie Civil"

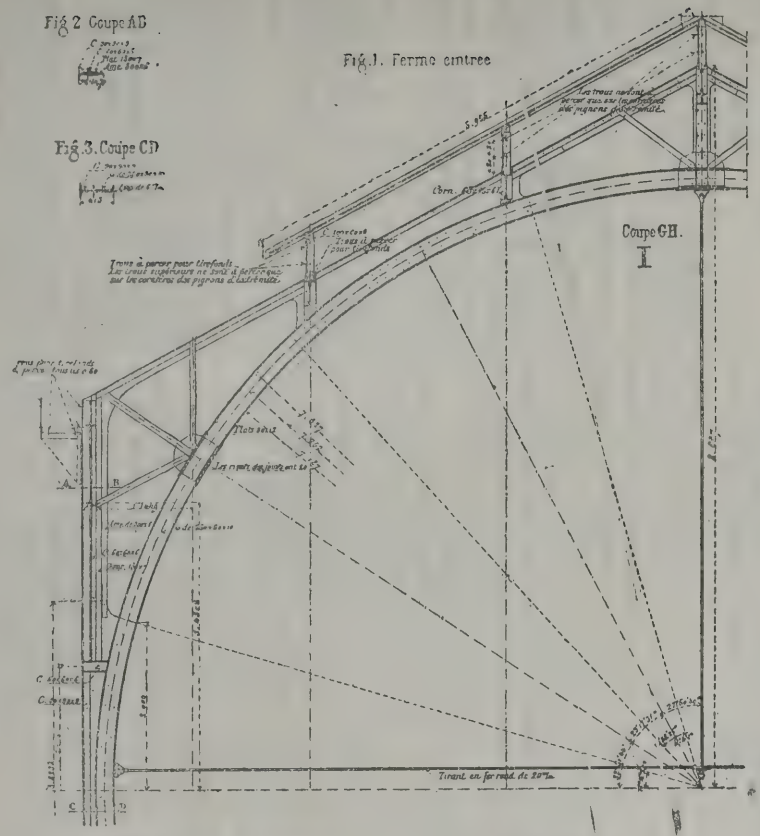


Fig.5. Elévation longitudinale de la galerie surélevée de 15 mètres

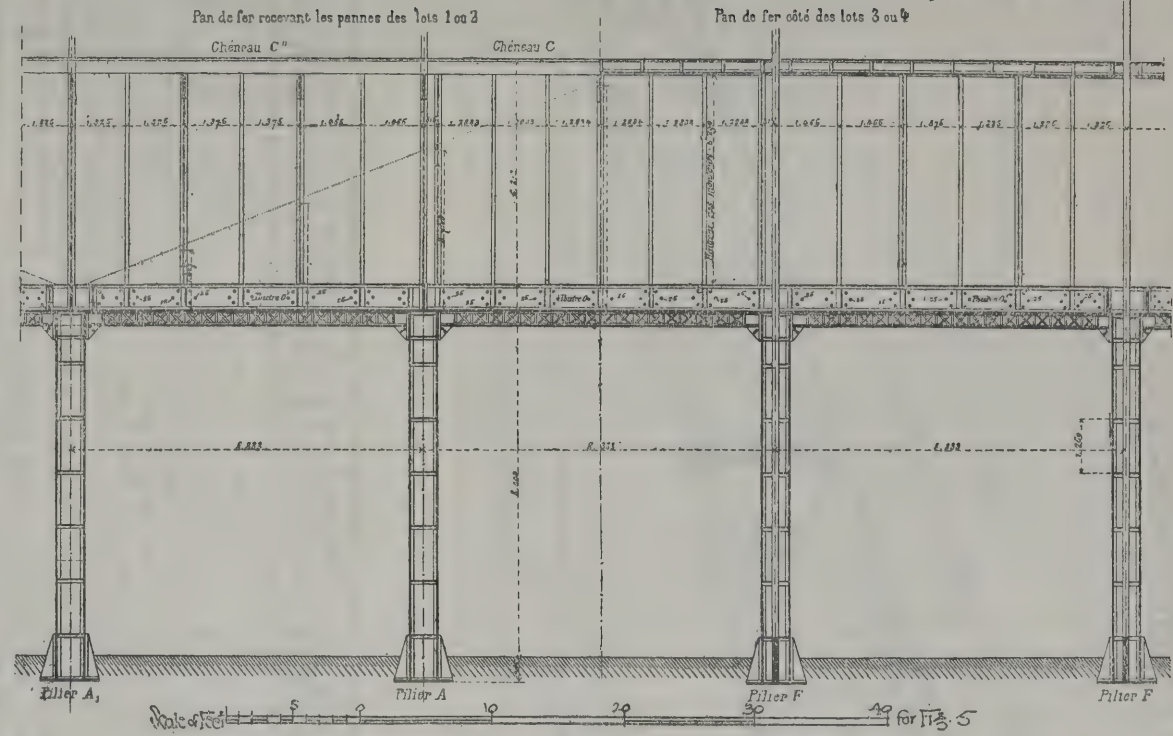


Fig.4 Détail du lanterneau.

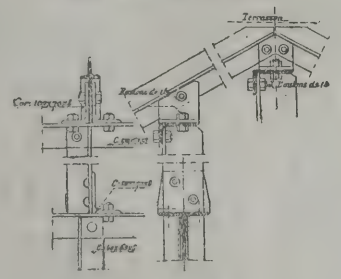
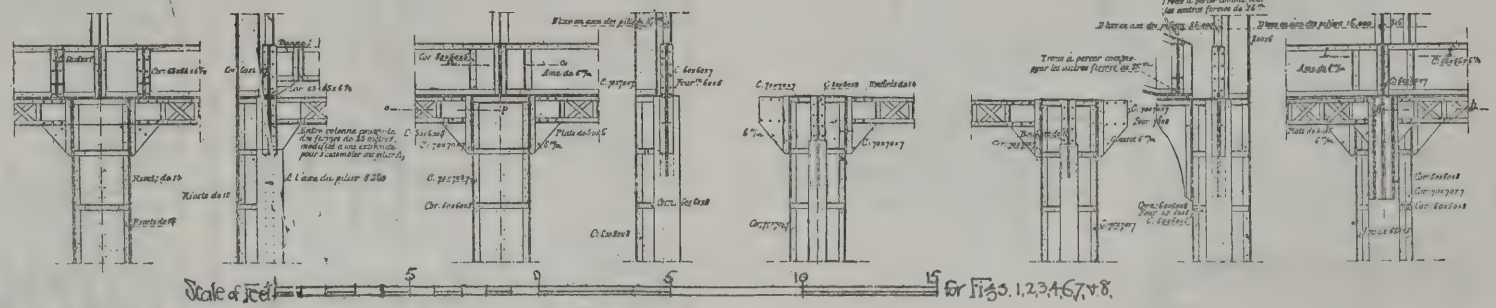


Fig.6. Détail du Pilier A_1

Fig.7. Détail du Pilier A.

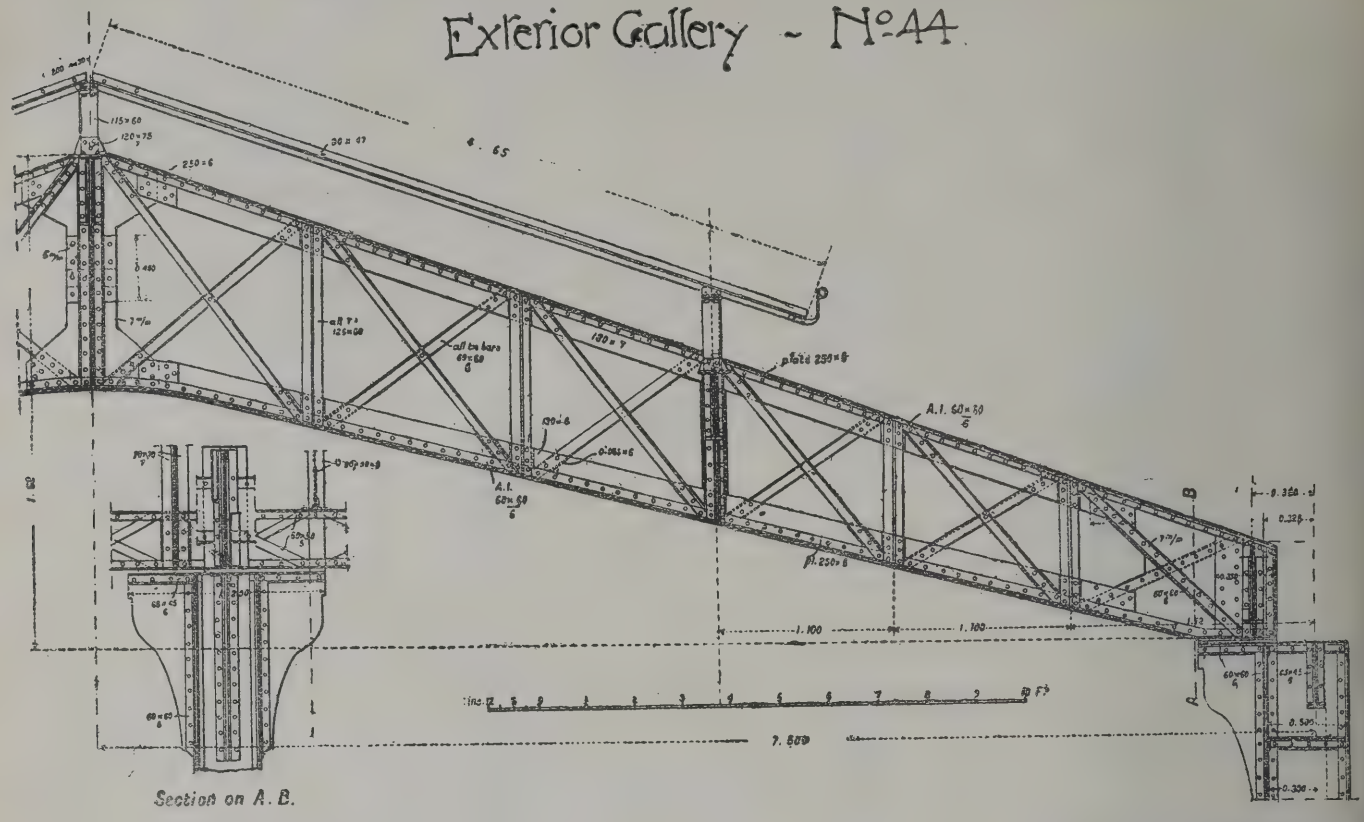
Fig.8. Détail du Pilier F



CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.

THE MISCELLANEOUS INDUSTRIES COURTS.

Exterior Gallery - N°44



Section on A.B.

Plate 46 in a capital drawing, with the figure sculpture put in nicely. The front is divided by seven pointed arches, and in the centre is a grand porch with canopied tombs on either side between the arcade piers and projecting from the walls. Plate 48 is devoted to the chapel of Santa Pietro Martire, Verona, with the tomb of Guglielmo da Castelbarco (1320) over the side entrance facing the square. The concluding plates are occupied with details, one being taken up by the marble and brick church of Santa Francesco at Brescia. The letterpress at the commencement of the volume is interspersed with marginal woodcuts and explanatory details, which are in their way most useful. We can recommend the work to our readers. It is well printed and nicely produced, as might be expected from the hands of Herr von Wasmuth.

CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—XIII.

By Banister Fletcher, Jun., A.R.I.B.A.

THE FIFTEEN-METRE CONNECTING GALLERY.

It will be seen that this gallery (see No. 31) runs across the axis of the Champ de Mars, and connects the main body of the "Palais des Expositions Diverses" with the wings at the junction of this vestibule with the Restaurant Courts, and the extremities are crowned with domes, described below. No. 42 is a sheet of drawings from *Le Génie Civil*, giving details of the columns supporting this roof and of the roof isself. Columns of three different types had to be used—these are marked A_1 A_2, and F—in the plan above, and were necessitated by the roofs on one side of the gallery running perpendicular to the gallery; while the roofs on the other side are parallel.

Details of these columns are also given.

Each gallery consists of eight trusses, bound together, as it were, with seven purlins; one at the ridge, and three at each side. These trusses are distant from each other 8·33m, or 27·32ft., and rest on the iron standards bound together with light iron trellis beams at the top.

The semicircular principal is formed of two U-irons, riveted back to back (8·63in. by 3·15in. by ·39in.) To this principal rafter is secured a tie-rod, about ⅞in. diam., which is held up in the centre by a light king-rod. Upon this circular principal rest the straight inclined rafters, composed of light angle-irons, and braced with bar-irons. There are seven purlins, the lower ones being at the level of the gutter, which is formed by the back of the vertical side of the principal being taken up. The light is from the upper part of the roof by a lantern, as shown. The intermediate rafters are spaced about 4ft. apart.

THE CONNECTING PAVILIONS

Occur at four points along this vestibule:—(1) At the points where the vestibule abuts on the Avenue de la Bourdonnais and the Avenue de Suffren; these pavilions are 15 mètres or 49ft. 2in. square. (2) And at the junction of this vestibule with the Restaurant Court, as shown in the plate, from *Le Génie Civil*, No. 43; these pavilions are not square, but are 50ft. by 49ft. 2in. on plan.

Each of these pavilions is carried on four lattice standards about 3ft. 3in. square, which supports the roof. At the upper part these standards are bound together by a trellis beam resting on a framework of iron with filling in, which separates the pavilion from the gallery. This framework of iron consists of uprights of double T-iron, to which the purlins of the gallery are fixed, and which are supported themselves by the circular principals. The iron lattice-work semicircular arches are not of the same height on any side, but are varied for the junction of the different roofs. The standards of these arches are united at 26ft. from the ground by a cross-beam of plate and angle-irons. On this beam rests the lower part of the double T-uprights, and the filling-in is by flat bricks placed between the uprights.

The decoration calls for no special remark, it is in "staff" and faïence decoration. The outer pavilion joining on the avenues are more richly decorated than the interior ones.

The undersides of the cupo'as in their interior are arranged with a pendentive and moulded panels in "staff," &c. The four piers supporting the domes are carried up as it were above the roof, and are ornamented with motifs in pottery and faïence.

The two internal domes are occupied by the Dutch Colonies and Switzerland, and are decorated by the "exposants" themselves, and consist not only of painted panels, but tapestry and carpets, &c. These inner partitions lead into the Restaurant Courts joining on the central garden, the roof to which (see No. 43, from *Le Génie Civil*) rests on a triangular-shaped girder, with the deepest end facing the garden, and resting on cast-iron ornamented columns. The framing in between these triangular girders, which are 7ft. deep on the garden side, is filled in with heavily-enriched "staff" decoration, glazed and painted with very rich colouring, with name spaces left in the centre, on which are printed the names of the principal towns in the world; this frieze extends round the three sides of the central garden, right up to the Galleries Rapp and Desaix. The distance between the columns supporting these triangular girders is 27ft. 4in., and the roof at the inner end is supported on girders framed in between the columns of the Palais des Expositions Diverses, between which, in order to isolate them one from the other (the Restaurant Courts from the Palais), there is filling in of brickwork. The exterior galleries of the Palais des Expositions Diverses, and which run into the connecting pavilions, have a span of 49ft. 2in., and a section is given in No. 44 from *Engineering*.

CHIPS.

The dissolution of partnership is announced of A. C. Morgan and C. J. C. Pawley, under the style of A. Morgan and Co., Prince's Mansions, Victoria-street, Westminster, land and estate agents and surveyors.

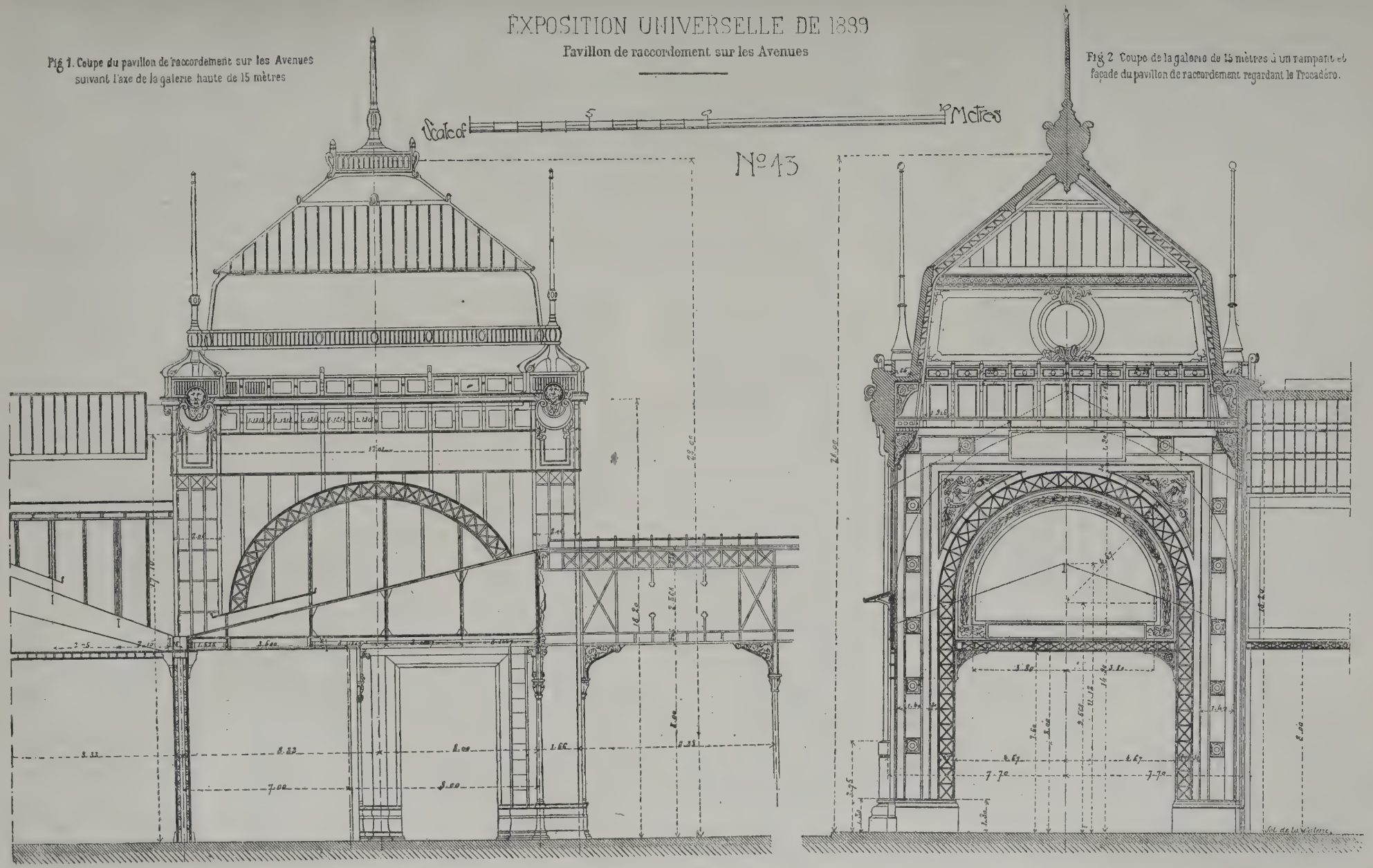
A new cemetery was opened at Earl's Barton last week. It consists of 10 acres of ground, and the mortuary, board-room, and caretaker's lodge, together with gates and piers, have been built and the grounds laid out, at a cost of £1,200, by Mr. G. Henson, of Wellingborough, from designs and plans by Mr. E. Sharman, of the latter town.

Mr. John Gallimore, builder and contractor of Newcastle-under-Lyme, and an ex-mayor of that borough, has been appointed on the Commission of the Peace for that town.

The peal of patent tubular bells which has done duty in the tower of St. Giles' Cathedral, Edinburgh, during the past twelve months, has just been replaced by another and more powerful set of the same description. The peal consists of thirteen bells—three of them being half-tones—in the key of C. It has been supplied by Messrs. Harrington at Latham, Coventry.

The ceremony of blessing the bells of St. Richard's new Roman Catholic chapel, Atherston, took place at the Church of the Sacred Heart, Huidsford, on Sunday. The chapel will accommodate 200 persons, and may be afterwards enlarged to hold 470. Messrs. Sinnott, Sinnott, and Powell, of Liverpool, are the architects, and Messrs. Brown and Son, of Salford, the contractors.

At the last meeting of the Skipton Rural Sanitary Authority, the contract for the sewerage of Carleton, from plans prepared by their surveyor, Mr. C. C. Smith, was let to Mr. Benjamin Kirk, of Skipton.



CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.

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ILLUSTRATIONS.

LEWISHAM GRAMMAR SCHOOL FOR GIRLS.—A PROCESSIONAL BANNER.—YORK UNION BANK, HULL.—OLDHAM SCHOOL BOARD OFFICES.—OSPEDALE MAGGIORE, MILAN.—BAPTISTERIUM AND DOMTHURM, CREMONA.—PETERSGATE, YORK.—ENTRANCE TO NORTH TRANSEPT, ROUEN CATHEDRAL.—CHIMNEY CORNER, LODSWORTH, SUSSEX.—CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—SKETCHES IN KENT.

Our Illustrations.

THE LEWISHAM GRAMMAR SCHOOL FOR GIRLS.

THIS school is being erected for the Governors thereof under a scheme prepared by the Charity Commissioners for the administration of certain local bequests, and the accommodation provided is for 300 day scholars. The school is built on the central hall system, the class-rooms opening into same on the ground floor. The size of the assembly hall is 60ft. by 30ft. by 27ft. high, and at the first-floor level is a gallery with accommodation for 80. This hall is well lighted with windows at end and sides, that at end being filled with a large three-light subject representing the Arts and Sciences. The other accommodation, briefly, is as follows: Board-room, fitted with museum and bookcases, 30ft. by 28ft.; dining-room, 27ft. 6in. by 17ft. 6in.; ante-room to the assembly hall, 25ft. by 12ft. 6in.; head mistress's room, 19ft. 6in. square, and three large class-rooms, and a very large cloak-room and lavatory partitioned off for each class for boot lockers, cloak stands, &c. All the above-mentioned rooms are on the ground floor. On the first floor are three large class-rooms, a drawing class-room, 21ft. square; a needlework-room 28ft. by 20ft. 6in.; a laboratory, 25ft. 6in. by 20ft. 6in., both fitted with fume-closets; and the necessary apparatus for teaching physiology, chemistry, &c.; assistant-mistresses' room, 22ft. 6in. by 20ft. 6in.; and a kitchen, 28ft. by 18ft., to be used for cookery lessons. Both floors are fitted with lavatories, &c., the sanitary fittings being of the most modern type. Externally the building is of red bricks and stone dressings, and slated with green slates, and is located at the corner of Hawstead-road and Rushey-green. The builder is Mr. S. J. Jerrard, of Lewisham. The building is surrounded by a large playground, with a covered play-shed for wet weather, and at the back high boundary walls, while in front are dwarf red-brick and stone boundary walls surmounted by a wrought-iron railing. The work has been done from the drawings and under the superintendence of Mr. Albert L. Guy, A.R.I.B.A., 78, High-street, Lewisham.

BANNER FOR ST. AGATHA'S CHURCH, LANDPORT.

THIS banner was the gift of the Rev. R. R. Dolling, of Winchester College Mission, Landport. It was embroidered in gold thread and various coloured silks by Miss C. B. Wright, of Alverstoke, Gosport, and designed by Mr. Oswald Fleuss, of Hammersmith, W.

NEW BANKING PREMISES FOR THE YORK UNION BANKING COMPANY, LIMITED, HULL.

THE York Union Banking Company are commencing the erection of new premises upon a site at the corner of Lowgate and Bowlalley-lane, in the town of Hull, and immediately opposite the Merchants' Exchange. The ground-floor of the building will be used for the purposes of the bank, and the upper floors will contain suites of offices, approached by a separate entrance. The exterior will be in the Flemish Renaissance style, executed in Ancaster stone, with granite for the basement. The works are from the designs of Messrs. Smith and Brodrick, of Hull, architects, which were selected in a limited competition.

OLDHAM SCHOOL BOARD OFFICES—SELECTED DESIGN.

THIS double-page plate represents the selected design in the late competition for the School Board offices, Oldham, of which Mr. Francis E. L. Harris, A.R.I.B.A., is the architect. The general arrangement of the various rooms is in accordance with the official instructions. All the departments have a direct light, and the board-room is disconnected from the main building. An ample entrance-hall and good staircases are features in the plan. The public hall accommodates 450 persons. The materials throughout are red bricks and freestone dressings. The main roofs are of light wrought ironwork covered with Westmoreland green slates. The staircases and floors are of light breeze concrete on wrought-iron joists. The high-pressure system of hot water is to be used for warming. The architectural design is of inexpensive character, well suited for a simply-treated building. The cubical contents are 297,032c.ft.

THE BAPTISTERIUM AND DOMTHURM, CREMONA, AND OSPEDALE MAGGIORE, MILAN.

(SEE description on p. 352.)

PETERSGATE, YORK, AND ENTRANCE TO THE NORTH TRANSEPT OF ROUEN CATHEDRAL.

THESE two sketches, by Mr. F. P. Barraud, were exhibited some little time since in King-street, St. James's, at Mr. Mendoza's galleries. The first named of the views shows Low Petersgate, the western towers of York Minster crowning the picture. The timber and plastered house to the left of the sketch was the home, during the middle of the last century, of Henry Hindley, the celebrated clockmaker, and great friend of the illustrious engineer, Smeaton. Gent, too, the printer, lived in this street, and died there in 1778. The other study represents the gateway leading to the north portals of Rouen Cathedral.

SKETCHES WITH THE SOCIETY OF ARCHITECTS IN KENT.

WE are indebted to Mr. J. W. Twist, of South Shields, for the sheet of well-executed sketches of some of the architectural objects of interest visited by the Society of Architects during their recent enjoyable and most successful excursion in Kent. Most of the sketches were referred to in our report last week and the week before, and the others are self-explanatory. A series of the same district were given in our issues of August 6, 13, and 20, 1886, on the occasion of the visit of the Architectural Association to Mid-Kent.

A memorial cross, designed by Mr. Kitchin, son of the present Dean of Winchester, is about to be placed over the grave of Dean Bramston at Winchester.

An organ has been placed in the Chapel of the Incarnation in St. Nicholas's Cathedral Church, Newcastle, at the cost of an anonymous donor, and was opened on Friday. It has been built by Mr. F. E. Nicholson, of Newcastle, and is inclosed in an oak case designed by the architect to the Dean and Chapter, Mr. R. J. Johnson, and executed by Mr. Ralph Hedley, the carver of the new oak work in the choir.

A new altar has been erected in St. Mary's Roman Catholic Church, Saltcoats, N.B. The new altar is of marble and Caen stone, and is from a plan by Messrs. Pugin and Pugin, and executed by Mr. R. J. Bolton, of Cheltenham. The height is about 30ft. The upper panels on each side of the altar represent a group of angels adoring the Blessed Sacrament. The cover panels and the super-altars are of Palermo marble. The throne is of Caen stone, resting upon marble pillars. The tabernacle, of iron, has a brass door, in which there is a floral design, the handiwork of Messrs. Hardman and Co., of Birmingham. The altar is one slab of stone, resting upon four marble pillars. The painting within the sanctuary is symbolic of Our Lady Mary, Star of the Sea. Beyond the altar is a small oriel window which has been filled with stained glass, also the work of Messrs. Hardman and Co. The railings, pulpit, and other internal fittings of the church have been renovated. The church was re-opened on Sunday.

COMPETITIONS.

"OWEN JONES" PRIZES.—The six prizes for the present year, given on the results of the annual competition of the Science and Art Department, have just been awarded. Each prize consists of a bound copy of Owen Jones's "Principles of Design," and a bronze medal. The following are the successful candidates:—

William E. Holt, School of Art, Burnley.—Design for a printed cotton hanging. Archibald Walker, School of Art, Glasgow.—Design for carpets. Lindsay Butterfield, School of Art, South Kensington.—Designs for printed tiles. Mary Mohun, School of Art, Canterbury.—Design for damask; design for tiles. William H. Cantrill, School of Art, Cavendish-street, Manchester.—Designs for the decoration of a staircase and proscenium of Manchester School of Art. Emma Hodgkinson, School of Art, Cavendish-street, Manchester.—Design for carpet.

THE TAITE WELSH INTERMEDIATE SCHOOL COMPETITION.—The award in this competition was made known last week, and in the assessor's (Mr. Ewan Christian) report the names of the successful competitors were placed in the following order:—Messrs. Phillips and Holdgate, Cardiff and Newport; Messrs. Baker and Hughes, London; Mr. T. E. Pryce, London; and Mr. R. Grierson, Bangor. It is intended to publish the assessor's report.

YORK.—The Municipal Offices Committee of the York Corporation have had before them designs from two London firms for furnishing the Council Chamber in the Municipal Buildings in course of construction. The designs were, it seems, considered too expensive, and it was decided to offer a premium of £20 for the best design, the cost not to exceed £600. The competition is open.

ARCHÆOLOGICAL.

CASTLE CARY.—The excavators have been hard at work at Cary Castle, Somersetshire, and now the foundations of the keep are sufficiently exposed to enable an accurate ground plan to be made. This plan reveals a state of things that was totally unexpected by archæologists. In the first place, it shows beyond doubt that the castle was not in the position where it was generally supposed to stand, and where its site had been marked on the latest Ordnance map, but about 200 yards to the south-west of it; and it shows that the castle was not an ordinary "shell keep," as described by G. T. Clark, but a strongly-built fortress of unusually large dimensions and thickness of walls. The outer wall is 15ft. in thickness, the foundations being of Cary Hill stone and the facings of Doulting and Ham Hill. The longest dimensions of the keep are 89ft. by 78ft. The worked or faced stones that have been discovered bear the marks of the axe. In the course of excavation a large quantity of bones of animals and pottery has been turned out, but as the digging has hitherto been confined to the walls and foundations, the "finds" in this way are not so miscellaneous as may be expected from an examination of the floors of the building and the well. The latter feature has not yet been found. There are also an iron arrow-head or two, and two blades of knives, a sling stone, and some flints belonging to the Early British times. Accurate plans and sections are being prepared for the purpose of preservation among the records of the Somersetshire Archæological Society at Taunton.

On Saturday afternoon, on the invitation of Mr. J. Pyke Thompson, about 70 ladies and gentlemen, members of the South Wales Art Society, and their friends, journeyed from Cardiff to Penarth, to enjoy the hospitality and inspect the recently acquired Turner drawings and the other art treasures of the proprietor of Turner House. We illustrated the gallery, which has been built from plans by Mr. Edwin Seward, R.C.A., of Cardiff, in our issue of the 22nd ult. The annual exhibition of the South Wales Art Society will be held in Cardiff in the middle of November.

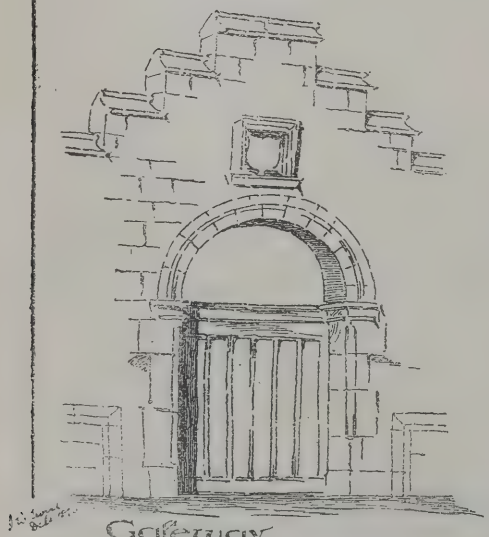
It is stated that the amount actually expended and paid for by the Jezreelites in building operations at Chatham up to the time the work was suspended was £30,000. It will cost over £2,000 to roof the temple, besides which extensive internal work will be required. The statement that the builders have taken over the land and buildings in satisfaction of their claim of over £6,000 was premature. The case has to go through the Chancery Division after the Long Vacation. Experts pronounce the unfinished temple as useless for any purpose, and there would be difficulty in pulling it down owing to the massive character of the work. Over 2,000 tons of iron was used in the construction of the temple.



The College
Maidstone.



Bay Window
Pensh



Gateway
Penshurst Place



Portion of West Front
Penshurst Place



Old House,



House
Chiddingstone.

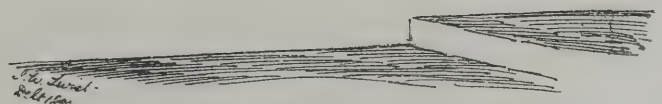


Church of S Martin
Canterbury





The Falstaff Inn
Canterbury



Tomb of Sir Thos Cawne
Church of S. Peter,
Ightham





Norman Staircase
Canterbury

D. & F. LAGANA 3 S

WAYSIDE NOTES.

SIR PAUL PINDAR'S house, so well known to London archæologists, is to be very shortly demolished. The quaint old façade in Bishopsgate-street is in danger of being destroyed. Unless somebody is forthcoming who will purchase and re-erect it in his own demense or in a public place, this curious relic of Mediæval London will utterly perish. Sir Paul Pindar's house stands on the site of the proposed extension of Liverpool-street Station, forming one of a whole block to be removed at no distant date. It is understood that any day a contract may be signed for the levelling of this block of buildings, so parties desirous of securing the old oak front, formed into quite unusual types of oriels, carved and grotesque to a vice, should not delay treating for it, and for the curious old first-floor ceiling for which the house is famed. Mr. E. A. Phipson, writing to a daily last week, suggested that its re-erection would be an ornament for one of the parks or for Epping Forest. I can imagine that an enterprising publican about to build a suburban "house" would find it a profitable speculation to invest in the façade and the ceiling, and to adapt the same to his new premises—or old ones for the matter of that. It would surely pay him, and it would be better thus to save the unique handiwork than that it should be utterly destroyed. And in being adapted to a public-house the old timbers would only be continuing in the same line of business as heretofore, feeling, perhaps, after long usage, quite at home amidst the clinking and clattering of pewter and glass.

The G.E.R. Co. have, it is believed, offered to deal generously, should anyone come forward, to preserve the work in the interest of the public—not the publican. I should think the company themselves would be able to do something in the way of preserving the valuable portion of it. It would not need a great amount of ingenuity or force of originality to work in the façade at some convenient spot along the line, where it could be seen by passers-by. The façade and ceiling could—if in sufficient preservation—be adapted to some new cottage or house at a country station. The probability is that the oak timbers are sound enough, and would stand a certain amount of refixing. Certainly the appearance of the work on the front would be enhanced to a vast extent by clearing off the paint that appears thickly overlaid. I recommend this idea for the preservation of the front and ceiling to the company, who could thus take the matter in hand themselves. The architectural department at Liverpool-street are surely equal to the task of adapting it somewhere as suggested.

The quarry-dressed stone system seems to be extending. The employment of ready-dressed stone upon works was, in part, the cause of the seven weeks strike of masons at Plymouth, which, by the way, has resulted in the contractors undertaking to abolish piecework, the men foregoing the demand with regard to ready-dressed stones. I am sorry if the practice of using quarry-worked stones is increasing, as it is inconsistent with good and true architecture. With a little study, I verily believe I could detect the job executed with stones worked hard by in the mason's yard, from that where every moulding and face had been wrought at the quarry a hundred or more miles away. I can sympathise with the Plymouth masons, although, of course, a contractor has free right to do as he pleases in the matter, unless bound down by his agreement, general conditions, or specification. Such a binding down I would recommend all those thinking as I do in this matter of quarry v. home labour to include in some part of the documents relating to a contract. In days gone by this was unnecessary; now, owing to the encroachment of the system of working architecturally at quarries, and the advantage in price offered, in certain cases, to contractors, the architect must protect his client and his reputation. It may be that I have taken an unmerited dislike to the system of quarry-worked stones; anyhow, I look upon it as in every way objectionable, leading to unsound construction, annoying delays, bad jointing and misfitting, and unsympathetic, unartistic masonry. The quarryman has his business: to quarry building stone from the bowels of the earth. The mason has *his* business: to dress and prepare, to mould, face, and carve the crude stones. The quarryman must work where the stone is to be found, and the mason must work at the building for which the stone is employed, so that he may be continually beneath the eye of the architect, or his representative, the clerk of works. In some circumstances, as, for example, building in London on a very limited site, this may be impossible; but wherever the area is sufficiently large, there should be established the masons' yard, the sounds of the saw and the boaster mingling with the ring of the bricklayer's trowel.

So far, the British Association talk has been rather "off" architecture, even archæology having been less patronised than usual. Possibly this has something to do with the fact that this year's centre, Leeds, being a manufacturing, commercial, work-a-day place, architecture and topics connected therewith are not apropos. Electricity has been the only wear, having received much attention at the hands of lecturers. After all, we do not look for architectural subjects at the meetings of the British Association, concerned with science. When the National Art Association holds its next meeting, we may have something more in our line.

When the Englishman locates himself in a "flat" he usually feels, in the higher stories, that, thus elevated above the level of sewers and drains, he is secure from many of the ills attendant upon disorganised sanitary arrangement. Doubtless, too, he often considers he is relieved from a great burden in having no subterranean drains for whose condition he is responsible. To many persons who have been bitten in taking houses the sanitary arrangements of which have been made under the superintendance of the demoralised speculative builder, the "flat" must appear to be a refuge from all further trouble in this direction. "A Sufferer," writing to the *Standard*, tells a different tale. Having on the recommendation of a young architect taken a flat in the West-end, on a three years' lease, his family are attacked with typhoid fever in less than three months, and a second case after an interval of six months. After some superficial reforms by landlords, on complaints from "A Sufferer," palpable defects and nuisance grow worse, and in spite of frequent applications to these gentlemen, nothing is done, nor are the letters so much as answered. The unfortunate tenant is now applying to the local sanitary authorities, and from his place of purgatory warns intending flat-takers not to be deceived by advertisements as to the "latest sanitary improvements," but to be more careful at the outset to obtain competent advice. The "Young Architect," one may imagine, from the tenor of "A Sufferer's" letter, has had a warm time of it, and won't get any more sanitary jobs in that direction. He may regret that dust-shoots don't generally go with clean bills of health, but may easily become the most abominable of nuisances; and as the dust-shoot was apparently the least offensive in this instance, one can hardly imagine what this "Young Architect" was about. His education, I fear, was sadly neglected.

As to what "A Sufferer" says in warning to intending flat-takers, I would second every word, and sympathise with him in his misfortune. People have been in a great hurry to run into flats. They have to learn yet that by so doing they lose the benefit of paddling one's own canoe, or living in one's very own house. The fashion, or craze, may not yet have reached its height; but some day there will certainly be a revulsion of feeling, and flat-holders will go house-hunting, and with the desertion of whole blocks the rents of flats will come down with a run. Such, at least, appears to me the probable course of events in the future. There may be some great attraction in living horizontally, so to speak, that will insure the landlords their rent; never having gone further than visiting people in flats, I cannot speak as to the comforts, enhanced or otherwise, of this method of living. All I can see is that there has been for some years a fashion, rage, or craze, and that such fashions, rages, and crazes are almost invariably followed, sooner or later, by a revolution of feeling in favour, generally, of something diametrically opposite in nature.

Reading about the ceremony of laying the foundation stone of the new St. Cuthbert's College, Worksop — a building designed by Messrs. Carpenter and Ingelow, and estimated to cost between £30,000 and £40,000—I am led to reflect what a curious collection of things the friends of the New Zealander, who is to sit on the ruins of London Bridge, will find under the foundation-stones of the buildings—then, I suppose, equally ruined—throughout England! Coins in plenty—gold, silver, and bronze, Jubilee and common; a garland; books, newspapers, Metropolitan and local; parchment scrolls, plain or emblazoned and illuminated, and what not besides! A veritable museum is sometimes placed under the foundation-stones of more extensive buildings, and from the care and trouble taken to insure a representative and date-telling discovery to the discoverers, one would imagine that the destiny of man depended upon the coins, parchments, and other parcels of goods deposited beneath the massy stones. Whereas every purpose of date-telling would be accomplished by empyting the contents of the first schoolboy's pocket into the cavity or receptacle, so long as he had a farthing to give the year of grace and our gracious Sovereign-Lady's name. The miscellaneous items—slate-pencil ends, trouser buttons, jack-knife, "penny dreadful," &c., would further give some idea of our advanced nineteenth-century civilisation.

GOTH.

ARCHITECTURAL ADVERTISING GRATIS IN AMERICA.

OUR correspondent last week who inclosed an advertisement from the *Hucknall Star* of some touting satellite in the architectural firmament did well in bringing the ten-and-sixpenny dodge forward. The idea, though by no means new, is at least suggestive. In America, however, architects do go ahead, and leave the most enterprising members of the profession in this country miles behind. We have, for example, an architect's card before us bearing the name of Ira C. Saxe, architect, 521, Chicago Opera House, Chicago, Ill., which is headed, "Take me home and look me over." Then follows this poem in eight verses:—

The Home, a problem great and grand
When worked out with an honest hand;
So many toil with might and main,
But lacking tools they toil in vain.

Now does it pay with a chisel
To spade gardens, what a fizzle;
No greater failure than some make
In getting there the rout they take.

For convenience let the mater
Make the floor plans without pater,
Should he kick dust about the bills,
Honey a few domestic pills.

How's the pantry? fathers don't know,
Mothers will have them, thus and so;
Fathers just yield a point right there,
Or take your pantry ev'rywhere.

Their closets for glass and china,
Closets for trinkets for Dina,
Closets for this, closets for that,
Closets for cloaks—yes, and for hat.

In such details in the houses
Let the housewife wear the trouse's;
Even the architect should cave
If he's not ready for the grave.

Business men are *in* but little,
Good women are *out* but little;
So women should be chairmen, see—
In household matters referee.

Ladies are friends of architects—
They go to him with house projects;
They know he'll treat them just and fair,
They advertise him ev'rywhere.

Thirty-five Buildings in my own town, Woodlawn, Ill. Eighty in all built last season. Best of references. I have a great variety of plans, which will be cheerfully shown. No pains spaired. Bound to please. Loans negotiated. Charges moderate. Special rates to Real Estate Men. Suburban Work A Specialty.

These particulars are grouped in the margin round the verses. At the bottom of the card we note:—

Please to turn over.

Chicago.

Gentlemen,—The past season having been very prosperous, I thank you heartily for your very liberal patronage, and am still ready to give my skill and best endeavour to the public, as an Architect and Superintendent.

Estimates cheerfully given. Loans negotiated.

Thirty-five buildings in my own suburb, Woodlawn, and eighty in all in the City and suburbs last season. Can furnish some of your best citizens as references.

Respectfully, IRA C. SAXE.

P.S.—Terms moderate. Suburban work a specialty. Special rates for Real Estate Dealers.

Have a great variety of plans on hand at all prices, and will show them cheerfully.

Maybe we can make you happy, if we don't build for you—if you will call.

Then just remember the true and the tried,
Who stands by his colours, and on the right side,
Who dares to do right and loves to do well,
That all will hasten my merits to tell.

I. C. S.

THE BRITISH ASSOCIATION AT LEEDS.

THE sixtieth meeting of the British Association, which has been held at Leeds during the last nine days, under the presidency of Sir Frederick Abel, has not attracted so many visitors as any meetings of recent years, and the papers have not, taken as a whole, been up to the usual standard. In accordance with our usual practice we give abstracts of a few of the papers most likely to interest our readers, many of whom may care to see fuller reports in the *English Mechanic and World of Science* of last week and to-day, September 5 and 12.

THE BUCKLING OF PLATES.

In the Mathematical Section Mr. G. H. Bryan, of Cambridge, read a paper on the buckling of plates, in which he described the working out of the analogues for a plane plate of the well-known conditions of stability of a straight elastic wire under axial force. The first case considered was that of the rectangular plate, supported but not clamped round its boundary, and acted on by different uniform edge thrusts in its plane applied perpendicularly to the sides and ends. The conditions of stability are found, and the most interesting point that they lead to is the determination of the number of corrugations produced when buckling takes place. If the thrust per unit length on the sides be less than half that on the ends, the plate will buckle into a series of undulations, whose number will depend on the ratio of the length to the breadth of the plates. In the case of an infinitely long strip, the corrugations will divide the strip into rectangles which diminish in length as the lateral thrust is diminished, will become squares when there is no end thrust only, and will become closer and narrower when the lateral force changes sign and becomes a tension. This effect may be easily illustrated by wetting the middle of a sheet of thin paper, which is then stretched over two rulers. If, then, the rulers are pulled apart with increasing force, the wrinkles will become more numerous and finer. The undulatory character of the buckling is also analogous to the collapse into rings of a boiler flue. The paper also contained an account of an investigation of the stability of a circular plate clamped round the edges and acted on by uniform normal edges thrust in its plane. This kind of buckling, he explained, was well illustrated in the circular lid of a canister whose rim is in a state of tension.

THE PNEUMATIC DISTRIBUTION OF POWER.

A paper dealing with the utilisation of compressed air was read by Professor Alan Lupton, who gave the results of his experience derived from the working of the pneumatic distribution system in Birmingham. He showed how the supply of this air through a meter induced economy on the part of the consumers, and he gave numerous particulars as to the use of this air in the propelling of tram-cars, in the working of the electric light, for various domestic purposes, and in Paris for the emptying of cesspools. He showed the great advantages of a power suitable for large or small motors that could be cheaply and safely introduced in workshops, houses, and shops. In Birmingham there were three steam-engines of 1,000H P. which compressed air to a pressure of 45lb. above the atmosphere, and delivered into pipes which were laid in the streets like gas-pipes, and over four miles of these pipes were there laid. The works had only just left the hands of the contractors, but already there were forty customers for air power, some of them at a distance of $1\frac{3}{4}$ mile from the compressing station. The loss of power by friction in the pipes was so slight that no ordinary gauge would show it—practically, there was no loss of power due to this distance. The engines of the consumers varied in size from $\frac{1}{2}$H.P. up to 50H.P. At one works they were now using about 100H.P., which drove four or five engines, also the blacksmiths' fires, the blast of the cupolas for iron smelting, and it was also used for several novel processes, economising labour and material, that had been discovered since the power was laid on. Some difficulty had been found in getting a good meter that was correct within 1 per cent. There was now a demand for the power which gave satisfaction to those who had tried it. Some people had actually moved into the district for the sake of the convenience of having power without having to erect a boiler and chimney. Comparing the mechanical results with the prophecies that were uttered in 1886, he mentioned that then it was alleged by some that the engines as designed could not be erected, but they had been now safely set to work. It had also been asserted by some that the loss of power in compressing was such that 25 to 30 per cent. was the maximum proportion of the original steam-power that could be used by the consumer's engines. The results, however, had entirely confirmed the statements of the engineers, Messrs. Sturgeon and H. Robinson. At one works visited by him (Professor A. Lupton) the indicated horse-power of the consumer's engine was equal to 73 per cent. of the indicated horse-power of the steam engines at the compressing station—a result he considered very satisfactory. This result was partly due to the re-heating of the air in a stove, where the sweepings of the workshop were consumed without cost. In consequence, he said, of these satisfactory mechanical results the Air Compressing Company were about to extend their works. Compressed air could be used for working tramways under the patents of Hughes and Lancaster. Under this system a pipe was laid in the streets for the supply of compressed air to the cars, which cars carry the machinery for propulsion, and can ascend any gradient that a locomotive can mount, and take in fresh supplies of compressed air at every stopping place, an operation which can be effected without actually stopping the car. An experimental car on this principle had been run on the Chester Tramway.

SLUICES IN CONNECTION WITH IRRIGATION.

Mr. F. G. M. Stoney contributed a paper on this subject, in which, speaking from his Indian experience, he described the various kinds of sluices which had been employed for this purpose. The most successful of them for almost any situation was that constructed on free rollers. These sluices were now made to any required size, and were easily workable, and the wear and tear was hardly noticeable. These sluices could be usefully applied to the increasing of water-power without increased risk of flooding the country.

Mr. J. F. Golding, of Chicago, U.S.A., explained

A NEW PROCESS OF MANUFACTURING WIRE NETTING.

He stated that expanded metal was an article so dissimilar to other manufactures of metals as to require an arbitrary name, and the one he had given to it was meagrely suggestive of the process involved in its production, and not of its qualities or appearance, as these were only understood by the fullest description, or by ocular or physical demonstrations and tests, but the name, suggesting the expansion of metal, did serve to draw attention to the fact that thereby some new product of metals had been made. Briefly stated, the process of making expanded metal was the employment of a machine which so operated on a sheet or strip of metal as to slash it at intervals in parallel lines, so as to leave uncut spaces, which served to maintain the connection between all the strands produced by the act of slashing. The method by which this slashing, as well as the opening up of the sheet or strip into meshes, was performed was peculiar, and one which made it possible to transform the sheet or strip of metal into a finished article at one operation; and to this achievement was due, he thought, the great value of the invention.

CABLE TRAMWAYS IN AMERICA.

Mr. W. Newby Colam, in a paper on this subject, referred to the various means of utilising electricity, air, steam, gas, and ammonia for street traction, and the author considered that only two of them had been working a sufficient time to afford a commercial test which would survive. These were the cable and steam locomotives. Of the electrical motors undergoing commercial trials abroad, the storage system was the only one likely to be seriously entertained in this country for street purposes. He hoped that the day was not far distant when it could be proved that this means of applying electrical locomotion in streets could be worked at a fair remuneration over the average roads, because he considered it would then have a big field of operation. Electrical engineers had, however, many difficulties to surmount before this class of motor could face the varied work of ordinary streets and pay well in this country. Steam-engines were not likely to receive much attention in the future for the purpose of traction through streets, but would be found useful as a means of connecting districts. Under the circumstances he suggested that the cable might be found the mechanical power to supersede horses in cases where horses were clearly not capable of meeting the new conditions of travel. Success had attended almost every inauguration in America and elsewhere, notwithstanding quite unnecessarily large capital outlays. There are at present 501 miles of cable tramways at work, which carried last year in the States nearly eight hundred millions of people, or nearly double the passengers carried in Great Britain and Ireland. Abroad dividends of 74 per cent. had been earned, and in England they were now being worked at 47 per cent. of the gross receipts. Mr. Colam gave his opinions as to the requirements to be observed in designing cable tramways in order that they might meet with the approval of local authorities and insure economical results. He described two lines he had made in Edinburgh, and he ventured on a prediction that the low constructural and equipment cost of such a system would not fail to attract the attention and demand the consideration of tramway authorities. The author also spoke of the remarkable success which had attended the working of cable tramways in Chicago and also in the Brooklyn district of New York.

THE LINEFF SYSTEM OF ELECTRICAL TRACTION.

Mr. Gisbert Kapp, in a paper on this subject, explained that the great difficulty was to connect the car with the source of the electric current. This has in some measure been accomplished by the use of accumulators carried by the car, and in other systems by the use of overhead wires—which in practice effect the object with very little loss of electromotive force. But when town councils began to object to overhead wires, some form of communicating the force from below became necessary. Various arrangements have been tried. In some cases a slot was used, as at Blackpool. This system is, as experience shows, practically workable, though the slot is a disadvantage, and its abolition is highly desirable. How to abolish the slot and yet retain electrical connection between the underground conductor and the motor on the car was the problem which the inventor set himself to solve. In his system the conductor consists of a bare copper strip or cable, and of a galvanised iron strip. The latter lies on the copper conductor, and both are inclosed in a sealed channel formed of asphalte. The copper conductor rests upon the bottom of a trough of glazed tiles, and the cover to this trough is formed by the lower flanges of iron rails arranged in short sections so as to be insulated from each other. The surface rail, which may be arranged alongside one of the ordinary tram rails, or in the centre of the track, is in electric and magnetic contact with an electro magnet carried under the car. This magnet runs upon the surface rail on wheels, which form its north and south poles. The distance of the wheels is greater than the length of a section of insulated rail, so that successive sections become oppositely magnetised. This causes the iron strip immediately below the magnetised region to be attracted upwards and thus come into contact for a length of several feet with the under side of the two sectional rails. At the same time the iron strip to both sides of this region remains in contact with the copper conductor, and forms thus an electrical connecting link between the copper conductor and a few sections of insulated rail under the car. The current passes from the surface rail through the body of the electro-magnet into the motor, and finally into the ordinary tram rails and earth in the usual manner. The electro-magnet is energised by a shunt current obtained from the main conductor; but to provide for the possibility of dropping the strip, there is placed on the electro-magnet a third thick wire coil, which can be energised by two storage cells carried on the car, and thus the strip can be picked up and the main circuit again established if it should have been accidentally interrupted. It follows that only a short length of the tram rail, never more than 9ft. at once, becomes the conductor of the current to the motor on the car. The system has been estimated to cost £2,000 per mile if adapted to ordinary tram lines; and the mechanical strength of the line has been tested by running a steam roller over it in various directions, under which treatment the line suffered no damage whatever.

DEFECTS IN THE ORDNANCE SURVEY.

Mr. Henry T. Crook read a paper on "The Present Stage of the Ordnance Survey and the

Paramount Necessity for a Thorough Revision." He said that it was strange that, when the need for accurate maps was daily increasing, there should be a falling off in the sale of the national maps, for the making of which the nation had paid an enormous sum. This was mainly attributable to the fact that the maps did not meet popular requirements. The Ordnance Survey Department had undertaken more than it had the means to carry out in any reasonable time, and after more than a century's existence the department had not completed one of its works. It had not yet produced on any scale a uniform map of the British Isles. Besides other disadvantages the important question of price affected the sale of the Ordnance maps. The establishment of a revision department was absolutely necessary, which could only be done by increasing the proportion of the annual grants devoted to revision.

NON-POROUS WALLS.

THE prevention of the saturation of ordinary brick walls is one of the many problems in modern buildings. Architects, with true conservative instincts, still cling to the solid brick walls, though sanitarians and hygienic builders have been preaching a crusade against them for many a year; and they still believe in solid walls, although it has been shown how easily all the beauty of solid moulded jambs and reveals can be produced in walls constructed with a cavity, and that the hollow wall has quite as much strength, if properly bonded by ties, as the solid wall, and can carry all the weight that is ever likely to be brought upon it. The preference for solid walls lies in the sentiment of the thing; the glory of ancient architecture has, in the popular mind, been associated with solidity and massiveness, and the thick stone wall, such as we see in the Tower of London, and in hundreds of our English castles and fortresses, has become a thing in the imagination that cannot be eradicated by any amount of scientific theory. The Englishman puts his faith in thick walls as symbolical of impregnable England. The Americans, and our colonists, who live in or have visited countries where timber abounds, are ready to assert the merits of wooden houses and log cabins, though they must have a liking for the old English wall of stone or brick. Their houses and villas have a *thin*, tawdry look about them; the reveals to windows look meagre; there is a lack of projection and shadow, which are such valuable features of English indigenous architecture. Even the half-timbered houses of the States cannot compare for picturesque qualities with those erected in England, where the original types of half-timber building are to be found. The timbers have a "skin deep" appearance; but the shingle wall of the States has merits which cannot be disputed. The shingle construction there adopted and perfected combines warmth and dryness in the colder and damp climates, and those who live in frame houses half built of brick and covered with clapboarding and shingles say they combine all the advantages of both systems. One reason of this is because there is a cavity—the walls are partially hollow. But there are advantages in the material; being a non-conductor of heat, it retains the warmth. Take, for example, the dwellings of this kind found in New York, Massaschusetts, and other States. The exteriors are shingled, and stained a bright sienna or painted red, with olive-green "trimmings"; the roof is also shingled and painted red. The interiors are finished in cherry or some hard wood like oak. There is considerable comfort in these well-finished houses. Other dwellings are sheathed and papered exteriorly, perhaps the first story is clapboarded and painted colonial yellow, with bottle-green trimmings; the second story is shingled and painted red. Sometimes the clapboarding is painted a grey, with trimmings of a darker shade. Whatever are the artistic merits or otherwise of these wooden houses, they are certainly comfortable, while the ordinary brick villa is subjected to every discomfort in wet weather, owing to the porousness of the bricks that are generally used.

If hollow walls are objected to there are remedial measures. Thus, Sylvester's process of repelling moisture is an old and simple plan that might be followed by builders before houses are let. It consists of using two washes alternately for the surface of the walls, one composed of Castile soap and water, and the other of alum and water. The proportions are three pounds of soap to one gallon of water, and half a pound of alum to four gallons of water, both substances to be well dissolved before applying. The first soap wash should be laid on while boiling hot, with a flat brush, and a frothy appearance be produced. After 24 hours, when it will become dry and hard, the alum wash is to be applied warm, and should also be allowed to dry before a second coat of the soap wash is put on. These coats can be repeated till the walls are rendered impervious to water. The combination of soap and alum forms an insoluble compound which fills the pores of the brick. The reason why so many houses are uninhabitable through dampness is because the remedy is applied too late, when the bricks have become begrimed with soot. The solution should be applied to newly built walls, and in the manner we have described, thoroughly, not merely a weak solution improperly applied in about two coats. If the provision were made in the contract and specified, there would be little of the trouble afterwards experienced by the tenants.

BOOKS RECEIVED.

Geometrical Drawing for Art Students, by I. H. Morris (London: Longmans, Green, and Co.), is arranged to meet the requirements of the art student, while it also supplies the student with all the geometrical knowledge required to pass the South Kensington examinations for the second and third grade art certificates. Mr. Morris has wisely devoted attention to the application of plane geometry to architectural and decorative art, and for this purpose has given prominence to the use of scales, which not many architects' draughtsmen understand, though they may use certain scales in a sort of rule-of-thumb manner. After lines and angles, triangles, and other geometrical figures have been defined, and simple problems in them given, the work treats of proportionals or the methods of dividing lines founded on Euclid VI., according to certain numbers or proportionally to them. Making copies of maps to a certain proportion are included in this part. The problems on triangles and quadrilaterals are fully and concisely worked out, the diagrams being very clear. Problems on the circle and regular polygons are comprehensively dealt with. The chapters on scales and the use of scales are very necessary and useful, and the problems presented are of a practical character. For example, the author explains the meaning of a "representative fraction," or the ratio each line of a drawing bears to the real object, as the fraction $\frac{1}{36}$ denotes the scale of 1in. to 1yd. Here is a problem: "Draw a scale of $\frac{1}{60}$ to show yards and feet, and measuring 5yds. The scale has to be long enough to measure 5yds. long; therefore its total length will be $\frac{5}{60}$th or $\frac{1}{12}$th of 1yd.—that is, 3in. Draw two lines 3in. long. Divide and number as shown." Another: 1in. represents 13ft. 4in. Draw the corresponding scale, divided into 10ft. lengths, one length, subdivided into feet. Here the representation fraction $= \frac{1\text{in.}}{13\text{ft. }4\text{in.}} = \frac{1}{160}$. The unit is a distance of 10ft. If 160in. be represented by 1in., then 10ft. or 120in. will be represented by $\frac{120}{160} = \frac{3}{4}$in. Set off distances of $\frac{3}{4}$in. representing 10ft., and subdivide left-hand division into 10 equal parts. The principle in the construction of diagonal scales is clearly explained, and several problems for drawing scales showing inches and lengths, hundredths, &c. The problems on the use of scales show how polygons and irregular figures, such as boundaries of land, can be drawn to certain scales. Thus problems of land surveying, levelling, architectural drawing are given to show the application of scales in drawing, reducing, and enlarging. The scale of chords for measuring angles, and the sector for dividing lines and constructing polygons, are also applied. The copying of ornament, such as the Greek fret, is one of the applications of this part of the treatise. In another chapter we find examples of geometry applied to the construction of patterns and tracery; and solid geometry is comprehensively dealt with in a series of valuable problems. The exercises at the end of each chapter are valuable to the student. The book contains nearly 600 diagrams, arranged on every alternate page, and these are particularly clear, and face the letterpress to which they refer. We can cordially recommend this little book to all art students and pupils.——*Handrailing and Staircasing*, by George Collins (London: Crosby Lockwood and Son), is a new edition of a useful treatise, showing simple methods for finding the pitch of the plank, drawing the moulds, bevelling, squaring the wreath, and other technical operations of the handrailer. The methods shown are at least simple. The present volume contains a treatise on stair building, in which the practical details of ordinary staircases are dealt with, which should prove of value to the student and apprentice.——*Structural Mechanics*, by R. M. Parkinson. We omitted to mention in our notice of this useful work that the publishers of this little book are George Bell and Sons, York-street, Covent-garden; and Whittaker and Co., Paternoster-square.

CHIPS.

A new Jewish synagogue, built from the designs of Mr. Delissa Joseph, was consecrated at Hammersmith on Saturday.

A fine new music-hall, which has been constructed at Chatham from the plans of Mr. G. Friend, of Maidstone, architect, was opened on Monday evening. It holds 2,000 people, and is fitted with the electric light both inside and out.

Old Greyfriars' Church, Edinburgh, which has been closed for over a month, was reopened on Sunday. The church has been renovated, and the organ has been overhauled and enlarged by Messrs. Hamilton, George-street, the successors to Messrs. Hamilton and Müller, the original builders.

The eleventh annual exhibition of the Isle of Wight Fine Art Society, of which Princess Beatrice is president, was opened on Monday at Ryde. About 500 pictures were exhibited by artists and amateurs from all parts of the island, including a three-panel screen, painted with flowers, and a small oil-painting, "Sunset at Biarritz," both by Princess Beatrice.

A Wesleyan chapel is being built in Union-street, Carlisle, from plans by Mr. James Leslie, of London-row, in that city. It will cost £3,500, and will be 72ft. long by 44ft. wide inside, seating about 500 persons. The seats and internal fittings are of pitch pine, with wood-block flooring introduced in the passages. The main front is of red brick with stone dressings. The chief contractor is Mr. James Beaty.

The engineering department of the City of London College, conducted by Mr. Henry Adams, P.S.E., M.S.A., will be opened on Oct. 1st. The classes include technical drawing, building construction and machine construction, civil engineering, quantity surveying and land surveying. Numerous valuable scholarships and prizes are offered in connection with the classes. In the architectural competition the subject given this session is a lych gate.

A scheme is under consideration in Liverpool for building a People's Hall in that city, from designs prepared by Mr. Edmund Ware. It is intended to erect a large hall to seat 2,500 people, a smaller concert hall for 250, together with twenty committee-rooms, library, smoke-room, reading-room, and gymnasium. The estimated cost is £30,000.

At the concluding sitting of the Trade Union Congress on Saturday, a resolution was adopted in favour of the compulsory registration of plumbers.

The tower of St. Giles's Church, Cripplegate, is undergoing restoration at a cost of £300. The work is being done by Messrs. Brass and Son.

Mr. Moss Flowers has been awarded a certificate of merit for his gradient indicator at the Health Exhibition, Brighton.

King Humbert will unveil a monument to the late King Victor Emmanuel, in Florence, on Saturday week, the 20th inst. A week later his Majesty will inaugurate the first Italian Architectural Exhibition at Turin.

The deadlock which has for some time paralysed the action of the Hanley School Board has ceased. The members were equally divided as to the policy or otherwise of adopting plans by Mr. Scrivener for new schools in Glass-street; but they have now resolved, only by the chairman's casting vote however, to carry out two blocks, one side of the street being reserved for an elementary school and the other for the higher grade school. For elementary schools for 698 scholars, on the south side, the architect's estimate was £8,893, including cost of site, which was £11 13s. 9d. per scholar. The estimated cost of carrying out the plans for the higher-grade school on the north side would work out at £28 9s., including cost of site. Mr. Scrivener said the estimated cost, according to the present plans, for the elementary school was £8,893, as against £10,938 according to the original plans; but they had done away with the cookery-room, the gymnasium, and the technical school room, and the accommodation was for 690 scholars instead of 898.

Building Intelligence.

Birmingham.—The United Methodist Free Church which has been erected at Gravelly Hill, Birmingham, in memory of the late Alderman M. J. Hart, was opened on Tuesday. The church, which is a Gothic building, standing at the junction of the Lichfield and Tamworth roads, is capable of accommodating 500 people, being 72ft. in length exclusive of apsed end, and 38ft. in width exclusive of transepts. The plan is cruciform in shape. The front end of the church is utilised for entrances and lobbies, and also for a cloak-room. The choir seats are arranged round an apsidal end at the rear of the rostrum, the opening being spanned by a large arch with two smaller arches, one being used for the front of the organ and the other being occupied by a large memorial tablet. The tablet is of statuary marble, with Caen stone and rouge royal marble dressings, the upper part being filled in with cut and carved stonework, with the letters "M. J. H." as a monogram in the centre. The pulpit stands at one side of the platform, and has been carried out from the designs of the architects by Messrs. Jones and Willis, in polished pitch pine and mahogany. The vestries, three in number, are on either side of the rostrum. Over the minister's and deacons' vestries and kitchen premises is a lecture-room. The buildings, which have cost £4,000, have been erected by Mr. John Bowen, of Balsall Heath, from the designs of Messrs. Ingall and Son, architects, Birmingham.

Bishopsgate.—The Great Eastern Railway Company are now demolishing shops on the western side of Bishopsgate-street, between Liverpool-street and Worship-street, preparatory to extending their terminus on the eastern side. The company obtained the necessary powers a good while ago, the *City Press* remarks, and during the last Session they got an extension of time for carrying out the project—five years as from August last. Except Primrose and Skinner streets, the company may permanently stop up and discontinue as public thoroughfares all the intervening spaces. A large number of the working class have been, or will be, removed by the extension and improvement, and provision has had to be made for them elsewhere. Three or four blocks of artisans' dwellings have been erected by the company not far from the spot the people have been removed from. Probably shops and offices will be re-erected along the thoroughfare. A new entrance to Liverpool-street Station will be made, with booking offices, &c., in Bishopsgate-street, opposite the fire-engine station, and this should relieve the pressure of the traffic on the Liverpool-street side. The whole project will be a costly one, involving an expenditure of a million pounds or more, of which £700,000 is put down for land and from £300,000 to £400,000 for the enlargement of the station and hotel. Among the principal buildings displaced are the Bishopsgate Schools and the school chapel in Skinner-street. The new schools are being built in Spital-square. The school, together with the adjoining chapel or hall, and curates' residence, has been designed by Mr. T. Chatfeild Clarke. The style will be simple Renaissance, and the materials to be used are red brick and terracotta. Messrs. Woodward and Co., the builders, have already made considerable progress with the foundations. The heating and ventilation of the building will be carried out by Mr. W. W. Phipson. Another public building to be removed is the Great Central Temperance Hall.

Botcherby, Carlisle.—A new mission church at Botcherby was opened on Friday by the Bishop of Carlisle. In plan the building consists of a hall, 36ft. by 24ft.; semi-octagonal chancel, 12ft. by 8ft.; vestry, with lavatory, and a heating-chamber. The style is Early Gothic. The principal external feature is a brick bell-turret 35ft. high, over the entrance-porch. Local red bricks are used for the principal walls, and the roofs are covered with Welsh slates, except the roofs of porch and turret, which are covered with red tiles. The carpenter's work is of Baltic white wood, and the joiner's work of pitch pine. The walls internally and the ceilings are plastered. The roof principals, which are dressed and moulded, show below the ceiling of hall. Accommodation is provided for 173 adults. The cost, exclusive of pewing and the boundary walling, is about £500. The internal fittings, consisting of desk-table and benches in solid oak, elaborately carved, are a special gift. The whole contract was carried out by Mr. John Reed, under the supervision of the architect, Mr. H. Higginson, M.S.A., Carlisle.

Carlisle.—The biscuit-works of Messrs. Carr and Co. are being enlarged by the erection of a new factory adjoining the present buildings, and from the designs of the same architect, Mr. T. Taylor Scott, of Carlisle. The foundations are being laid by Messrs. Johnstone Brothers, of Blencowe-street, Carlisle. Since then the contracts for all works have been let as follows:—Builder's work, Messrs. Johnstone Brothers, Carlisle; fireproof construction, tanks, and all ironfounder's work, Messrs. Homan and Rodgers, of London, Manchester, and Belgium; carpenter and joiner's work, Mr. Wm. Lattimer; plumber's work, Messrs. W. and R. M. Hill; slater's work, Mr. Thos. Graham; and plasterer's work, Messrs. R. M. Ormerod and Sons, all of Carlisle. The bricks that are being used are from Birkby, which were tested by hydraulic machinery before being used for Messrs. Carr's Silloth flour mill. The external elevations of the new building will be much the same in design as the present, viz.:—red brick, with white stone dressings and slated roofs. The building consists of basement and four floors, each 97ft. by 64ft., and adjoining is a new chimney shaft 170ft. in height. The buildings will be fireproof throughout, and the new factory will be connected with the old one by a fireproof staircase and corridors, closed at the ends with iron fireproof doors. The whole of the buildings will be lighted by the electric light, this being the first building in Carlisle so lighted.

Liddington.—The parish church of St. Andrew was reopened on Friday, after being closed ten months for repairs and restoration. The chancel has been repaired by the Ecclesiastical Commissioners; Mr. Ewan Christian being the architect for this portion; and for the other work, executed by subscription, the architect was Mr. J. C. Traylen, of Stamford, the diocesan surveyor. Messrs. Roberts and Son, of Weedon, were the builders. The work of the nave and aisles has consisted of renewing the roofs in oak without departing from the old design. The floor throughout has been renewed; under the seating solid wood blocks have been laid in the herring-bone pattern; whilst in the passages the old stones have been relaid, replaced where necessary by new ones. The old grave slabs have been retained in their original positions; the ancient plastering of the walls has been cleaned; fragments of old painting have been carefully preserved, thus retaining as far as possible the ancient appearance of the church; the glaze of the windows has been re-leaded and made weather-tight; the exterior of the church has been repaired and pointed; parapets and other features have been reinstated; the screen has been cleaned and repaired, traces of the usual coloured figure decoration on the lower panels being preserved; the font has been set up on new steps and shaft, the Jacobean font cover being retained. In the chancel is a curious feature. High up on the north and south walls twelve small holes (six in each wall) have been opened out. Their use is believed to be connected with the acoustic properties of the church. The rood-loft staircase, which had been hidden behind lath and plaster, has also been opened out. The church will now accommodate 236 worshippers. The clock has been replaced by one made by Messrs. Potts, Leeds. The restoration has cost £1,900.

Newcastle-on-Tyne.—A special meeting of the Town Hall and Municipal Offices Committee of the Newcastle Corporation was held on Monday, when it was unanimously agreed that the city engineer should prepare tracings to show the street improvements deemed necessary in connection with the four sites suggested for the new town hall—namely, Fenkle-street, Eldon-square, Singleton House, and a new site that was suggested by Mr. Edward Stout, including the whole of the ground on the east side of Pilgrim-street, bordered on the north by Blackett-street, and as far back as Carliol-street, showing a new street line in continuation of Market-street to a point opposite the entrance to the Blyth and Tyne Railway Station. It was also agreed that Mr. Laws should prepare at the same time a plan showing a new street line from Grey-street to the Haymarket, skirting the proposed new town hall, should it be eventually decided by the council to erect one in Eldon-square.

Newport, Mon.—Some two years back, the School Board for Newport United District having advertised for designs for schools at Spring Gardens to accommodate 1,000 children in three departments, many of the local architects submitted plans for the same. The Board, after selecting two sets of drawings as most suiting their requirements, marked these drawings A and B, and forwarded both sets to Mr. Bruce Vaughan, architect, of Cardiff, for adjudication, who advised the acceptance of plans marked B, the author of these being Mr. E. A. Lansdowne, of Newport, and the schools have been carried out under his supervision by Mr. Wm. Price, builder, of Newport, for a sum of £6,055 16s. 7d. The fireproof flooring was executed by Messrs. Homan and Rodgers, Manchester; latrine by Messrs. Adams and Co.; lavatory ditto, Macfarlane's cast iron; and Mr. Henry Richards, of Newport, acted as clerk of works.

St. Anne's-on-the-Sea.—The convalescen- home which has been erected at St. Anne's-on-the-Sea by the two Misses Ormerod will be formally opened by the Lady Eleanor Cecily Clifton to-morrow (Saturday). The home is situated at the junction of Clifton Drive with Todmorden-road, St. Anne's-on-the-Sea. The principal entrance faces the Clifton Drive, and is approached from the Todmorden-road. It communicates directly with the departments appropriated to the use of the management, the portion devoted to the convalescents being on the sea front of the building. The accommodation comprises refectories and kitchen offices in the basement, with the day-rooms for the children, sitting-rooms and doctor's room on the ground or principal floor. The dormitories and bedrooms are arranged on the upper floors reached by two staircases, one at either end of the building. The exterior is faced with red bricks from Ruabon, the roofs being furnished with large board gables and covered with green slates. The site comprises an acre and a half. The building has been erected from the designs of Mr. Frederick Mew, architect, of Gordon-street, London. The contractors for the work have been Messrs. Shepherd, Walmsley, and Smith, of St. Anne's-on-the-Sea.

Worksop.—The Duke of Newcastle on Friday laid the foundation-stone of the new St. Cuthbert's College, Worksop. The college is to be erected on a site, over 90 acres in extent, midway between Worksop and Clumber, in the northern part of the county of Nottingham. The architects are Messrs. Carpenter and Ingelow, of Regent-street, London, and the building, when complete, is estimated to cost between £30,000 and £40,000. It will accommodate five hundred boys. At present it is intended to proceed only with the west wing and permanent offices. This will cost £15,000, and will accommodate one hundred boys.

A four-floored block of buildings, built for model lodging-houses, was opened on Friday by the Mayor of Newport, who is chairman of the company who have supplied the capital, of which just over £4,000 has already been expended. The number of beds licensed for the present building is 153. They are laid out in bunks, 26 of which are double-bedded, while the remainder are single-bedded. The premises, situate at the corner of Dock-street and Corn-street, have been erected of plain stonework, with firebrick dressings for the windows, by Mr. John Linton, contractor, from designs by Mr. E. A. Lansdowne, the total cost being about £3,000 for the shell, and £750 for fittings and furnishing.

At the last meeting of the Manchester Crematorium Company held on Friday, the chairman reported that the directors had agreed that a piece of land on the Chorlton side of the southern cemetery, in Barlow Moor-road, should be acquired from Lord Egerton. The crematorium would thus form, as it were, a continuation of the southern cemetery. The chairman had visited the Paris Crematorium at the Père la Chaise, and those at Zurich and Milan. The directors had decided upon adopting a furnace, an improvement on that constructed at Zurich, which from an engineer's standpoint, the chairman considered the most perfect. The directors had engaged Messrs. Salomons and Steinthal, of Manchester, as architects, and these gentlemen had prepared a project for the crematorium. It would consist of a hall or chapel 50ft. by 25ft., containing the furnace, with open columbaria for the reception of urns and memorial tablets. The style selected was Romanesque, and it was proposed to build the same in stone, with red-tiled roofs. The entire cost would reach £6,000.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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YOUTHFUL ARCHITECT. (Five per cent. on all is the right charge. If you take less, that is a matter of private agreement with your clients.)

RECEIVED.—R. M.—S. and B.—H. S. B. Co.—J. M.—T. F.—G. E. C.—S. L.—A. and Co.—B. A. H.—W. H.

Correspondence.

CANTERBURY CATHEDRAL.

To the Editor of the BUILDING NEWS.

SIR,—Allow me to correct an error in your report of the "Architects'" visit to Canterbury Cathedral.

I said the whole of the choir, presbytery, Trinity chapel (east of the choir), and corona was built between the year 1174 and 1184; not as stated in your report, between 1189 and 1199. The figures I quoted are those given by Professor Willis. You will much oblige by making the correction.—I am, &c.,

JOHN R. HALL.

The north window of Dodington church has just been filled-in with stained glass. The subject is the Wise Men presenting their offerings to the Infant Saviour. The window is by Messrs. Bell and Sons, of College Green, Bristol.

At the Stockton Corporation's last meeting a member complained that Mr. Campbell, the borough surveyor, had given Mr. T. Atterby, builder, certificates for houses in Shaftesbury-street which had walls only 4½in. instead of 9in. thick, that the same was the case with regard to a house in Lawrence-street, which Mr. Atterby had also allowed to be occupied without a certificate, and that Mr. Atterby was building houses in Bishopton-road with 4½in. walls. The mayor said all this was true, and it was a very grave offence; but the corporation were powerless. The Shaftesbury-street houses had been certificated more than six months, and therefore the authority could not interfere; and with regard to the Lawrence-street and Bishopton-road houses, the surveyor, without the knowledge of the Plans Committee of that authority, had compromised the matter and rendered the authority powerless.

Intercommunication.

QUESTIONS.

[10372.]—**Farm Buildings.**—Will any reader inform which is the best book written on this subject?—SCOT.

[10373.]—**Noiseless Pavements.**—I am anxious to ascertain, if possible, what are the best noiseless pavements suitable for the immediate vicinity of public buildings, churches, chapels, etc. I shall be glad if any of your numerous readers would give me their opinion and experience on this subject.—EDWARD VERGETTE, Town Councillor, Peterborough Corporation, Market-street, Peterborough.

[10374.]—**Stoppage of Work Let.**—In case where the several trades for the erection of a new building have been let and the works only partially proceeded with, what claim have the contractors, on their contracts being rescinded; and what can the architect charge in closing the affair with the contractors, and bringing the matter to a satisfactory issue with regard to materials partly prepared, such as joinery and cast-iron work.—FAIRATION.

[10375.]—**Road Embankment.**—In forming the embankment, having sloped sides, of a roadway, say some twenty yards above present surface, is there any objection to making the same principally of engine and other waste ashes to formation levels, and finishing on the top with ordinary sandstone lagging, balder, and gravel, rolled to form permanent way for traffic, as a public roadway.—ENQUIRER.

[10376.]—**Contract Stamps.**—Is a sixpenny stamp sufficient to make an ordinary contract binding, or should the value of the stamp vary with the amount of the contract?—DOUBTFUL.

[10377.]—**Flushing Tank.**—What form of flushing tank should be placed for collecting rain water, for flushing. Is not the siphon form the best? A reply from some practical reader will oblige—COUNTRY BUILDER.

[10378.]—**Rough-cast.**—Specification for "rough-cast" on exterior face of wall, also smooth surface to filling between half-timber framing on brickwork? Will frost affect either if work done in October?—OWNER.

[10379.]—**R.I.B.A. Exams.**—In the R.I.B.A. calendar it states that, among other probationary drawings submitted before Examination, is "a drawing from the round." Will you kindly say the kind of thing you consider suitable? Also a good work on "Renaissance" architecture.—GEORGE SPARKES.

[10380.]—**Building of Basements.**—Having read an interesting leader on the above in the BUILDING NEWS of October 29th, I would be glad to know the best method of constructing a basement wall, and how the thickness of the outer and inner walls are arrived at, and how the cavity could be effectually drained from any moisture, supposing it to be left open. For example: The building to be situated on a hill-side, the ground-floor level just above street on one side, and the basement level 13ft. below, the wall to be carried being 2ft. 6in. thick at ground-floor level. Perhaps a correspondent who has successfully carried out an example similar to the above, without showing signs of damp, will enlighten me? The earth on the high side would abut against basement wall.—P. S.

[10381.]—**Roof, Graphical Solution.**—Will someone tell me what are the proportions of load which a king-post truss should have at the feet of principals, half-way up the rafter, and at the ridge, to enable a correct stress diagram to be drawn? I find on looking at different treatises that the proportion of the W on each point varies. How is this?—A PUPIL.

[10382.]—**Altar Rail.**—How far should the Communion rail be placed from the east wall of chancel, and how many steps should there be within? Perhaps "H. W." will give his opinion and kindly oblige, as practice varies very much.—A. H.

[10383.]—**North Devon.**—Are there any interesting churches to be seen within twenty miles of Ilfracombe? Intending tourist will be obliged for any account of them.—TOURIST.

REPLIES.

[10324.]—**One Chimney to a number of Domestic Open Fireplaces.**—Seeing that there has not been a reply to this question, allow me to state that since asking it I have, in going over some old papers, come across an illustration of a residence called "The Cliffe," Eastbourne, Sussex (Mr. H. H. Vale, Architect), showing the flues from the various chimney breasts gathered together in the basement, and ran under a conservatory to utilise the heat from the main flue on its way to a tower rising considerably above the flat roof of residence. Can anyone say whether this building has been carried out, and if the flue construction is a success? If I remember rightly, the Accountants' Institute, London, has flues constructed on a similar principle. Will some of your readers give details or descriptive particulars of either of the foregoing, and how the throatings over fireplace openings are connected to downcast shaft, and whether it is necessary to use dampers to fireplaces not in use.—TOLOP.

[10345.]—**Colouring Cement.**—I have used Robinson's cement for outside walls both in brick and in half-timber work, and am very well satisfied with it. I have coloured it through about ⅛in. thick, using equal parts of sand and cement, and coloured with yellow ochre or Vandyke, according to the tint I required. I let the plasterer prepare a small sample to judge the colour from, as the colour when wet dries much lighter when dry. I question if a light tint could be obtained with Portland.—EDGAR WOOD.

[10353.]—**Proper Fall.**—House-drains should have a fall of not less than 1 in 60.—B. E.

[10355.]—**Reducing Bearing of Beam.**—The 8ft. bay will carry 22½cwt. distributed, and the 4ft. bay 45cwt. distributed, provided that the safe shearing strength of the beam is not exceeded, which without a section of the beam I could not tell.—B. E.

[10356.]—**Breaking Weight.**—The formula is—

$$W = \frac{60\,b\,d^2}{l}$$

where— W = breaking weight in cwts. distributed.
b = breadth of beam.
d = depth of beam.
l = span of beam, all in inches.

Substituting the dimensions gives a breaking weight of 324cwt. distributed.—B. E.

[10359]. — **Intercepting Chamber.** — W. P. Buchan's reply does not answer the question I put, which was: What part of the area is most convenient for a chamber? I am aware that the intercepting trap must be placed on the line of the drain. A chamber is really required in this case for easy access to the branches; the depth of drain requires a chamber. What should be its size? I thought about 3ft. by 2ft. 6in., and is it absolutely necessary that the back manhole should be in a line with it? Perhaps "C. J. K." or "W. P. B." will reply?—A YOUNG ARCHITECT.

[10362.]—**Fireproof Floor.**—It does not matter whether concrete, properly prepared with calcined materials, or terracotta, is used, as I believe both can be made absolutely fireproof. The interlocking bricks made by Messrs. Doulton and others are fire-resisting. William Lindsay's fireproof floor (see advt. last week) shows a good construction: the blocks, which rest on rolled joists at intervals, are hollow and interlock by means of a groove and tongue; upon this a layer of concrete is placed, and dovetailed-shaped fillets are inserted to secure the flooring boards. The air spaces left are desirable. Concrete would not expand prejudicially, and if the joists are protected on their lower flange, their expansion would be rendered unobjectionable. One of the most economical forms of construction is that of Dennett's, where the ironwork is completely incased, and the material forming the arches is thoroughly fire-resisting. The iron joists should have a certain play for expansion and contraction, and their lower flanges should be protected by terracotta or concrete.—G. H. G.

[10364.]—**Estimating.**—Read the "Notes on Building Prices," by Mr. John Leaning, now appearing in the BUILDING NEWS, which series is the most rational mode of treating the subject I have seen, and will doubtless give "T. W. C. E." all he requires. The tables given last week are very useful approximations.—G. H. G.

[10365.]—**Sanitary Inspectors' Examination.**—The best all-round book to prepare for examination in sanitary inspection is "A Practical Guide for Sanitary Inspectors," by F. R. Wilson, published by Knight and Co., price 4s. 6d.—ASSOC. SAN. INST.

[10366.]—**Enforcing Completion of Contract.**—"Architect" should be able to employ someone to complete contract, and charge cost to the contractor who refuses to complete the work. This is his only alternative if the contractor declines to do certain things. The employer cannot compel the contractor to finish without taking legal measures.—G. H. G.

[10367.]—**Strains in Roof.**—The method of sections applied to a roof is founded on the principle of taking a vertical line, and resolving the strains horizontally and vertically by means of the parallelogram of forces. All the resolved parallel forces acting in one direction should equal those acting in a contrary direction to produce equilibrium.—G. H. G.

[10368.]—**Portland Cement.**—To pass through a sieve of 2,500 meshes per square inch, without leaving more than 15 per cent. behind. When made up neat and filled into a glass botttle, and struck level with the top, it must not, in setting crack the bottle, nor rise out of it, nor become loose in it by shrinking. When made up neat and filled into moulds, and removed from the mould when set (which time must not exceed 24 hours) and immersed in water for seven days, it must withstand a breaking tensile strain of 350lb. per square inch of section. (Note: the briquettes should be gauged as dry as possible.) When made into patters ⅛in. thick, and immersing in water for any time, should not crack, swell, or shrink. It should not weigh under 110lb. per bushel.—B. E.

CHIPS.

A branch of the Bristol and West of England Bank for Clifton and Redland is about to be erected. The building has been designed by Mr. Henry Williams, and it will be erected on the site of Queen's Villa, near the Victoria Rooms.

New central schools, erected for the Pudsey School Board, in Chapeltown, Pudsey, from plans prepared by Messrs. Holtom and Fox, of Westgate, Dewsbury, were opened on Monday. The whole scheme, which is now completed, has involved an outlay of £6,000, the present school, which has been opened two years, costing £2,500, and the new mixed school and infants' department, just opened, about £3,400. The entire block is in the Gothic style.

The late Thomas Joseph Braham, of Hurley-gardens, South Kensington, has bequeathed his oil paintings by Abraham Pether and Sebastian Pether to the National Gallery.

A new Liberal club, built from designs by Mr. Thomas Ambler, has been opened in East Hunslet, Leeds, this week.

The St. Stephen's Schools, Canonbury, London, are being warmed and ventilated by means of Shorland's patent Manchester grates, supplied by Mr. E. H. Shorland, of Manchester.

At the last meeting of the Aberdeen County Council Public Health Committee Mr. J. D. Watson, burgh surveyor, Arbroath, from a leet of six, was elected to the office of sanitary inspector for the county. The salary is £250 and travelling expenses.

LEGAL INTELLIGENCE.

PUBLIC HEALTH ACT, 1875.—BAD MORTAR.—At the Skipton Petty Sessions, on August 15, before his Honour Judge Ingham and other magistrates, William Sagar, a builder, of Barnoldswick, was summoned for constructing three dwelling houses at Barnoldswick, within the district of the Skipton Rural Sanitary Authority, with bad mortar. Mr. C. C. Smith, surveyor to the authority, produced samples of mortar which had been taken from the walls of houses, and also plastic mortar taken from the heap in use at the time of his visits, as well as a subsoil which the builder was using for sand. Benjamin Kirk, a builder and contractor, who had been in business 22 years, also gave evidence as to the improper mortar, which was in appearance that of sun-dried clay. The effect of wet weather and frost would be to cause all the mortar to crumble and make the houses very damp. The defendant, who was represented by Mr. W. A. Robinson, said he was building his houses of good mortar, and produced a sample of the sand which he said he was using. The Bench, however, considered the case proved, and fined defendant 10s. and costs. A further case against William Sagar was that he had constructed his party walls of 6in. instead of 9in. The defendant's solicitor put forth the theory that when the plaster was put on the walls they would be 9in. thick within the meaning of by-laws. For this offence the defendant was also fined 10s. and costs.

CLAIM FOR WAGES DURING A STRIKE.—At Marlborough-street, on Monday, Messrs. Stephens, Bastow, and Co., builders, of Stewart's-road, Wandsworth-road, were summoned by a number of their workmen for wages in respect to a job in South Audley-street. Several of the men were called, and stated that on their applying for their wages on Saturday, August 23, they received a sum of money on account, and were told that they could not be paid in full because the architect's certificate had not been received. On the following Monday and Tuesday they went to work, and continued at work till about 9 o'clock on the morning of the latter day. They remained on the premises during Tuesday, but did not work, and on the Wednesday morning on going to the job and hearing that no money was forthcoming they applied for and obtained the summonses, 28 in number. They claimed to be paid up to the Wednesday night, inasmuch as they were not discharged, but the firm on August 30 had paid them only up to the Tuesday morning. Some of the men then resumed work, but others insisted upon their claim for both wages and legal expenses. For the defence it was stated that, although the men were not formally discharged, they were told that if they would not work they might take their tools and go. They were not engaged under contract, and therefore could only claim for the work actually done. Moreover, although they were not discharged, they practically discharged themselves by declining to continue to work, and made no further claim at the time the balance of the wages was paid. Mr. Hannay said that by ceasing to work the men had committed an act for which they might at once be discharged; but as they were not formally discharged they were in strict legality entitled to pay for the whole of the Tuesday. But, in equity, it would be very harsh and unfair, under the circumstances, to make the masters pay for that for which they received no consideration, and he would therefore make no order in the case.

IN RE GEORGE LAW, KIDDERMINSTER. — A private meeting of the creditors of Mr. George Law, contractor, Kidderminster, was held on Friday at Birmingham. About forty creditors were present, and others were represented. The statement of affairs showed total liabilities £18,541 10s. 6d. The assets (including contracts complete or in progress, £4,500) are £7,296 11s., showing a deficiency of £11,244 17s. 6d. Mr. Dawes explained that the debtor's position was due to a series of losses on contracts, and among them he mentioned the Leicester contract for sewerage £5,000, West Bromwich ditto £3,000, Stratford £3,000, and Walsall £1,000. An offer of 5s. in the pound was rejected, but the creditors agreed to accept an amended offer of 7s. 6d. in the pound, payable at three, six, and nine months, the last instalment guaranteed.

THE GREEN-STREET IMPROVEMENT.—A claim for compensation arising out of the project for improving the communication between the Strand and Piccadilly by widening Green-street, Leicester-square, was decided on Friday at the Law Courts by Sir P. Edlin and a jury. Mr. Gabriel, the claimant, stated that in November, 1889, he bought for £3,325 some vacant freehold land, formerly known as No. 1, Green-street, and No. 31, Leicester-square, and entered into an agreement for the erection of buildings at a ground-rent of £250 a year. His witnesses estimated the present value of the land at between £6,198 and £6,325, whereas the vestry placed the value at something between £2,385 and £3,316, and questioned the genuineness of the building agreement. The jury awarded the sum of £3,823 15s., or 15 per cent. on the original purchase-money.

WATER SUPPLY AND SANITARY MATTERS.

EDINBURGH WATER SUPPLY.—At a meeting of the Works Committee of the Edinburgh and District Water Trust on Friday, the remit of the trustees in connection with the schemes for an additional supply of water was considered. The committee unanimously resolved to appoint as advising engineers Mr. Hill, C.E., the engineer of the Manchester Corporation, and Mr. Gale, C.E., the engineer of the Glasgow Corporation. Messrs. Hill and Gale will be requested to report on the following points:—(1) The capabilities of the existing undertaking of the trustees, having regard to the possible recurrence of a dry period; (2) the existing requirements of the whole community served by the trustees, keeping in view the almost universal use of w.c.'s and other improved sanitary appliances in Edinburgh and district; (3) whether they can suggest any more effectual means of suppressing waste than those in operation at present; (4) the probable future requirements, looking to the large increase in the population, and in the demand for trade purposes that has taken place since 1870; and (5) whether the time has come when the trustees should take action for the bringing in of an additional supply of water, and if so, to report along with the engineers of the Trust what scheme should be adopted, looking to the quality and quantity of the water to be obtained, the relative cost, and to the probability of its receiving the sanction of Parliament.

CHIPS.

During cleaning operations at the ancient parish church at East Ham, remains of old frescoes have been discovered under many coats of whitewash. They will be uncovered and left on view.

As the result of action recently taken by the Edinburgh Town Council, and at a cost exceeding £1,200, a road has been constructed at Abbeyhill to take the place of Rose-lane. The new road measures over 450ft. in length and 40ft. in breadth. The old lane was only 24ft. wide. The plans were prepared by the City Roads Department, and the work was carried out by Mr. William Gerrard, builder, Ivy-terrace, Edinburgh.

Garrigill Church was reopened on Friday. The restoration has involved re-seating, re-roofing, the construction of the chancel, the removal of the old gallery, and the replacing of the old by new windows. Mr. Hicks, of Newcastle-on-Tyne, is the architect, Mr. Turner and Mr. Hugh Kearton, of Alston, being the contractors for the mason and joiner work respectively.

The Earl of Dartmouth on Saturday laid the memorial centenary stone forming the basis of a number of external and internal improvements and alterations which are in progress at the church of St. James's, Slaithwaite. The church was built in the latter half of the 18th century, and does not lay claim to any architectural pretensions. It was decided some time since to restore the church, and the work has been placed in the hands of Messrs. John Kirk and Sons, architects, Huddersfield and Dewsbury, and the cost is estimated at £3,500.

The Local Government Board have issued to sanitary authorities a circular as to provisional orders under the Public Health Acts, the Local Government Act, 1888, the Housing of the Working Classes Act, 1890, and the Gas and Waterworks Facilities Acts. They direct that all applications for provisional orders under these enactments must be received by them not later than the 30th Nov., next, except that applications under the Lands Clauses Acts may be sent in up to the 21st Dec. The circular is accompanied by special instructions as to improvement schemes under the Housing of the Working Classes Act of last Session.

On behalf of the Local Government Board, Mr. Thornhill Harrison held an inquiry in the Town Hall, Newcastle-on-Tyne, on Friday, in reference to an application from the corporation of Newcastle to borrow £10,000 for paving purposes, and for the disposal of corporate land in the township of Walker and in Bath-lane. The city engineer, Mr. W. G. Laws, explained the proposals.

Mr. J. T. Harrison, C.E., instructed by the Local Government Board, held an inquiry at South Shields on Monday in reference to the application of the corporation to borrow £3,044 for street improvements; £1,115 for the construction of a bridge in Derby-street; £1,100 for the purchase of land at Westoe for the erection of branch police and fire-brigade stations; and £555 for the extension of the North Park and the provision of a public clock. There was no opposition.

The mansion at Holly Hill, Southampton, is undergoing internal renovation. The fine building erected for Mr. Quinton Hogg has suffered greatly from fires, as will be remembered. The present owner, Sir E. Walter, is having the restoration done by Mr. Green, of Blandford. Mr. Crickmay, of Weymouth and London, is the architect.

Our Office Table.

IN a letter to Monday's *Times*, Mr. Edwin Freshfield, F.S.A., remarks that the destruction by fire of the Mosque of St. Sophia at Salonica is one of the greatest losses which the students of Byzantine architecture could have sustained, short of the removal of its more celebrated namesake at Constantinople. Both churches were built in the reign of the Emperor Justinian, and at a later date that at Salonica had added to it the two apses to the north and south of the central apse, which represented a later style of Byzantine church arrangement. Built somewhat on the model of the Constantinople church, it had certain modifications of its model, not due only to its smaller size, but also to a further development of style. Retaining the central dome and eastern apse, it is without the four conchs, or semi-domes, which make so beautiful and picturesque additions to its fellow church and that of St. Sergius and Bacchus at Constantinople, and the church of St. Vitale at Ravenna. These four conchs appear in no later buildings, and the church of St. Sophia at Salonica is the first built without them. The same architect who built this church built also the church of St. Demetrius in the same city, and the details of the capitals of the pillars conclusively show, Mr. Freshfield thinks, that the same hand designed the details of the two before-named churches at Constantinople and the churches of St. Sophia and St. Demetrius at Salonica, and the church of St. Vitale at Ravenna. This will give some idea of the interest of the building now apparently lost to us—the connecting link between the first and latest styles of Byzantine architecture. Fortunately, we have some drawings of it published in Messrs. Texier and Pullan's well-known work, and two years ago Mr. Freshfield had a series of photographs taken of some of the details by a local photographer on the occasion of a visit there. They are not first-rate, but they are better than nothing.

UNDER the title of "Kirkstall Abbey Ruined,' the *Leeds Express* has published views of that beautiful 13th-Century Cistercian monastery church as it appeared a year since clothed with ivy and surrounded by trees and as it is now seen, its bare and blackened walls having been stripped by order of a committee of the town council of all their picturesque environments. While the removal of the ivy from the walls was necessary, there was surely for the present no need to level the site and grub up the fine trees which gave protection from the wind, and those in charge of the operations cannot be acquitted of blame for carelessness, for it will be remembered that an elm was allowed in May to fall across the refectory wall, bringing down tons of masonry and doing more mischief than all the vegetation and trees in the grounds would have effected in half a century had they been suffered to remain. Similar injury was wrought by a newly-appointed vicar to the sister abbey of the same order at Netley some 20 years since under the like plea of preservation. The mistake made by corporations in the case of public parks and abbey ruins, is that they are guided in their ideas of treatment by the gardeners whom they appoint as custodians, and who naturally conceive they must "keep on doing something" to justify their existence.

FOLLOWING, though not in chronological sequence, the Stuart and Tudor Exhibitions held at the New Gallery during the past two winters, an exhibition of pictures and objects of interest connected with the Royal House of Hanover, from the accession of George I. to the death of William IV. (1714-1837), will be on view at the same gallery from January to April of next year. The scope of the exhibition will include not only portraits of the Royal family, but also those of the most famous statesmen, lawyers, divines, naval and military commanders, and the representatives of art, literature, and science in a sufficiently wide field. The exhibition will also comprise miniatures, prints, drawings, books, manuscripts (including autographs), embroideries, plate, porcelain, coins and medals, seals, and personal relics.

THE three pictures purchased from Lord Radnor's collection at Longford Castle for £55,000 were temporarily placed on view on screens in the Umbrian Room of the National Gallery yesterday (Thursday). The chief one,

Holbein's "Ambassadors," a panel picture 8ft. square, representing a full-length figure of a man in a magnificent costume (probably Jean de Dinteville), and a second person in the dress of a Protestant doctor standing behind a table covered with astronomical instruments; the accessories are numerous and splendid. This work is signed and dated 1533. The other works are a full-length portrait of the soldier Adrian Palido Pareja, inscribed "Did. Velasqz. Philip IV., a cubiculo ejusque pictor, 1639"; and a portrait of an unknown man by Moroni.

By the death of Miss Helen Watson the Scottish National Gallery in Edinburgh has been enriched by a large and valuable collection of paintings, engravings, missals, frescoes, &c., the bequest of her brother, Mr. William Finlay Watson, long a bookseller in Princes-street, who died in 1881. Among the paintings are Wilkie's original sketch for "The Penny Wedding," a couple of Turners, evidently early works; paintings by Vandyck, David Roberts, Holbein, Alexander Nasmyth, Hamilton (the Scottish Vandyck), and Hogarth; while the portraits include those of Prince Charlie, Queen Mary, Edmund Spenser, Shakespeare, Allan Ramsay, Henry Mackenzie ("The Man of Feeling"), Charles I., Darnley, George Buchanan, Smollett, Columbus, the Admirable Crichton, James Watt, and many other notabilities. To the Museum of Science and Art in Chambers-street, Edinburgh, Miss Watson has bequeathed a collection of china of rare value, with a great variety of specimens of antiquarian and historical interest, such as the dressing-gown of Napoleon I. and Clarinda's tea-tray, cup, and saucer from which Robert Burns drank tea.

A German paper points out that sheet zinc, when in direct contact with brickwork, suffers to an appreciable extent from rapid corrosion. In building the Berlin city market halls, a portion of the zinc work which rested upon brick walls was found to be deeply pitted at a number of places, particularly where the metal was close to the bricks. Chemical examination of these resulted in showing that they contained as much as 1·14 per cent. of soluble salts, of which the destructive effect increases by moisture. The proportion of such salts varies with different kinds of brick, while in some there may be nothing to induce any such corrosion. As a preventive, roofing felt or similar material may be placed between the zinc and brickwork.

The *Kew Bulletin* contains a section on the properties and uses of the jarrah wood, a species of eucalyptus, native to Western Australia. The main difficulties in connection with its use in this country are the cost of freight for such heavy timber from Australia, and its intense hardness, which makes it difficult for ordinary English carpenters' tools to work it. The tree which produces it grows generally to a height of 100ft., and sometimes 150ft. It is found only in Western Australia, forming mainly the forest of that colony. According to Baron Mueller, when selected from hilly localities, cut while the sap is least active, and subsequently carefully dried, it proves impervious to the boring of insects. It has been tried at three places in the Suez Canal, and, after having been down several years, the trial samples were taken up in order that a report on their condition might be sent to Paris. Jarrah has lately been used by the Chelsea Vestry for paving the King's-road, and by the Lambeth Vestry in the Westminster Bridge-road.

The time-table of the day and evening classes in civil engineering, building construction, architecture, plumbing and sanitation, to be carried on next session at the Glasgow and West of Scotland Technical College, has just been published. The courses of study are based on those of the Science and Art Department and the City and Guilds of London Institute; but the honours classes in the sections of building construction and architecture, which are conducted by Mr. Charles Gourley, A.R.I.B.A., are specially valuable features.

Experiments are being conducted in the Channel near Folkestone for the purpose of testing the geological structure of that portion of the sea-bed upon which it is proposed to construct a bridge across the Straits. The engineers in charge of the work are M. Georges Hersent and M. Renaud, marine hydrographic engineers. The examination of the French coast is finished, and so far as it has proceeded on the English side of the Channel it has, it is stated, proved very satisfactory, the sea bottom being very solid and suitable for the proposed structure. There is comparatively very little variation in the depths except at the sand-banks, which would be bridged over.

Trade News.

WAGES MOVEMENTS.

Barnsley.—The bricklayers' strike has been settled. The men agree to accept 8½d. per hour and some alterations of rules in settlement of their demand, which was originally for 9d. per hour.

Newcastle-on-Tyne.—The Newcastle Branch of the Amalgamated Workmen Slaters having given notice for an advance of wages of a halfpenny per hour, a meeting of the master slaters has been held, when it was decided to grant the advance.

Northwich.—The carpenters and joiners of this town are on strike for an advance of ½d. per hour, and a reduction of one hour on Saturdays.

Olney, Beds.—The building agitation has subsided, the masters having granted the demands of the men both as to shorter hours and increased wages. Thus all danger of a strike is obviated. The men will in future work 56½ hours per week, at 5½d. per hour, and all hours extra will be paid for at the rate of 6d. per hour.

Plymouth.—After a suspension of work for between six and seven weeks the masons of Plymouth resumed work on Monday morning, having come to an arrangement with the Master Builders' Association. The men ceased work suddenly in the latter part of July, after laying before the masters a new set of rules, the principal features of which were the entire abolition of piecework, and a demand that no dressed stone, with one or two exceptions, should be allowed to come into the town. It was arranged on Saturday that work should be resumed on the basis of the practical abolition of piecework, except in the case of old contracts running on that system, and that the masters, with regard to dressed stone, might bring it from where they pleased, and work it where they pleased. There was thus no question of either time or wages in dispute, and the strike has cost the men some £3,000. There have been considerably over 200 masons out of work, and they have kept a number of carpenters and labourers unemployed.

CHIPS.

Portland-street Congregational Church, Southport, has just been reopened after undergoing considerable alterations, additions, and decorations. The whole work has been carried out from designs prepared by Mr. C. Sydney Ingham, architect, of Manchester and Southport.

A new watering-place is about to be developed on the seaside portion of the Tankerton Estate, between Whitstable and Herne Bay. The project has been undertaken by the new Lord of the Manor of Whitstable, Mr. Newton-Robinson.

A new block of buildings intended to be used as workshops and stores at the gasworks at Stafford is now almost complete. The building is of red and blue brick, from the designs of Mr. J. F. Bell, the engineer of the works. Mr. W. Reynolds was the contractor, and the cost was £900.

Memorial stones of the new Congregational Chapel on Richmond Hill, Bournemouth, were laid on Wednesday week. Seats will be provided for about 1,100 worshippers. The building throughout is of Late Gothic design, the materials to be used being Swanage stone facings, with Bath and Portland stone dressings. Most of the materials of the old chapel will be utilised in the new building. The contractor is Mr. Kingerlee, of Oxford, the contract price being £10,643, but with furnishing the total cost will be about £12,000. We illustrated the new building, which is being erected from plans by Messrs. Lawson and Donkin, of Bournemouth, selected in a local competition, in our issue of Dec. 13, 1889.

The annual excursion of the members of the Glasgow Archæological Society took place on Tuesday, when St. Andrew's, Leuchars Church, and Earlshall were visited.

Terry's Theatre in the Strand is being redecorated by Messrs. Campbell, Smith and Co., of Newman-street, Oxford-street, W.

A scheme is about to be floated for a "ship railway" to carry coal by sea and land from Cardiff to London and the English Channel ports. The route is across the counties of Somerset and Devon between Bridgwater and Seaton. The proposed undertaking has the approval of Sir Wm. Thos. Lewis and others interested in the prosperity of the district, and will be explained to local merchants by Mr. W. Smith, Aberdeen.

A receiving order has been granted in the case of Edwin Finch Spragg, of Saltoun-road, Brixton, surveyor.

A new police station has been erected at Leman-street, E., and special attention has been paid to the ventilation, the extraction of the vitiated air being effected by Messrs. Robert Boyle and Son's latest improved patent self-acting air-pump ventilator.

A new Brynyffynnon Wesleyan church was opened at Wrexham on Friday by the Rev. C. H. Kelly, ex-president of the Wesleyan Conference. The new buildings occupy the site of an old chapel in Regent-street, and comprise a church and school, with ample vestry and classroom accommodation. They have been designed in the style of English Gothic which prevailed in the 13th century. The architects are Messrs. William Waddington and Son, of Manchester and Burnley.

Holloway's Ointment and Pills.—The Ointment is a wonderfully healing application, as it cleanses the surface of foul sores and ulcers, soothes the throbbing and pain in cases of inflammation, and checks the progress of skin diseases. The Pills purify the blood, cleanse the liver, and remove all noxious matter from the system.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

Aberdeen.—For additions to the lairage at Pocra jetty, for the harbour board:—
Gair, R., Aberdeen (accepted) ... £517 0 0

Aberstoke.—For the erection of iron emergency staircases, and alterations to wards at the Aberstoke House of Industry. Mr. W. Yeardye, Gosport and Fareham, architect. Quantities supplied:—

Plummer, J., Fareham	£138	0	0
Crockerell, J., Portsmouth	137	0	0
Croad, J., Gosport	131	0	0
Lear, C. J., Aberstoke	128	0	0
Rapley, W., Gosport	115	14	6½
Dash, C. M., Gosport	115	13	8
Hall, T. P., Southsea (accepted) ...	99	0	0

ABERSTOKE.—For alterations, additions, repairs, &c., at the Aberstoke National Schools. Mr. W. Yeardye, Gosport and Fareham, architect:—

Rapley, W., Gosport	£488	1	0
Lear, C. J., Aberstoke	454	1	1
Croad, J., Gosport (accepted) ...	420	9	0

AXBRIDGE.—For works in connection with the Weare water supply, for the rural sanitary authority:—

Simmons, of Cheddar (accepted) ... £49 10 0

BARNSLEY.—For the alteration of the Harvey Institute, for the town council:—

(Accepted tenders.)

Masonry, joiners, and slaters:—

Robinson and Sons	£910	0	0

Plasterer:—

Flemming	25	0	0

Plumber and glazier:—

Rusforth, S.	38	12	6

Patent glazing:—

Helliwell, J. W....	33	14	6

BATHGATE, N.B.—For the execution of a drainage scheme, for the burgh commissioners. Messrs. Leslie and Reid, Edinburgh, engineers:—

Macknight and Son, Uphall ...	£4,127	8	11
Brebner, R., Edinburgh	4,090	7	6
Nimmo and Cowpar, Blairadam*	4,008	15	7

* Accepted.

BETHNAL GREEN.—For building a hospital in Austin-street, Bethnal Green, E. Mr. R. H. Hill, 3, Lombard-court, E.C., architect:—

Langdale and Hallett	£12,000	0	0
Chappell, J. T.	10,201	0	0
Nightingale	9,954	0	0
Holloway Bros.	9,581	0	0
Marsland	9,475	0	0
Outhwaite and Co.	9,445	0	0
Mortar, J.	9,420	0	0
Coxhead, J. J.	9,333	0	0
Gregory, T.	9,287	0	0
Lawrence and Son	9,275	0	0
Holloway, H. L.	9,173	0	0
Greenwood, J., and Son	9,155	0	0

BROMLEY, KENT.—For making up the playgrounds at Aylesbury-road Schools, for the school board:—

Gill	£237	0	0
Lansbury	105	0	0
Peill (accepted)	97	0	0

BURTON-ON-TRENT.—For the enlargement of the infants' and girls' schools at Stapenhill, for the Burton school board:—

Chamberlain Bros., Burton (accepted) ... £753

BURTON-ON-TRENT.—For the extension of Wetmore-road board schools:—

Vernon, H., Derby (accepted) ... £2,531 16 0

DOUGLAS.—For marble mosaic paving, Victoria Pier, Douglas, Isle of Man. Mr. H. A. Cheers, Twickenham, architect:—

Mainzer and Kempthorne, 18, Berners-street, W. £330

(Accepted.)

FAREHAM.—For alterations and additions at the Fareham Union Workhouse. Mr. W. Yeardye, Gosforth and Fareham, architect. Quantities supplied:—

Boulton, H. F., Buckland... ...	£1,385	0	0
Blackman, G. H., Fareham ...	1,270	0	0
Croad, J., Gosport	1,260	0	0
Jones, H., Southsea...	1,190	0	0
Love and Son, Gosport	1,185	0	0
Hall, T. P., Southsea	1,184	0	0
Learmouth, W., Portsmouth ...	1,164	1	0
Tuite, E , Fareham	1,160	0	0
White, F. G., & Sons, Portsmouth	1,158	0	0
Conway, C., Wickham	1,149	18	0
Snee, W., Landport	1,131	0	0
Fullford's Trustee, Fareham ...	1,105	0	0
Wareham, C., Stubbington ...	1,054	0	0
Plummer, J., Fareham	1,050	0	0
Crockerell, J., Landport	1,010	0	0
Stallard, G., Havant (accepted) ...	1,010	0	0

FORTON.—For alterations, &c., to premises, Forton-road, to form shop. Mr. W. Yeardye, Gosport and Fareham, architect:—

Dash, C. M.	£67	5	0
Croad, J.	63	0	0
Jupe, C.	62	0	0
Crockerell, J. Landport	50	0	0
Rapley, W. (accepted)	40	6	9

Rest of Gosport.

GOSPORT.—For the erection of iron building to form new library. Mr. W. Yeardye, Gosport and Fareham, architect:—

Croad, J., Gosport (accepted) ... £159 0 0

GOSPORT.—For additions to house in North Cross-street, Gosport. Mr. W. Yeardye, Gosport and Fareham, architest:—

Dash, C. M., Gosport (accepted) ... £63 10 0

HEREFORD.—For the erection of farm-buildings at Longtown. Mr. G. H. Godsell, Hereford, architect:—

Prosser, J., Longtown (accepted) ... £100 0 0

HEREFORD.—For alterations and additions to the Spread Eagle Hotel, for the Alton Court Brewery Co. Mr. G. H. Godsell, architect:—

Loyd, J.	£390	17	0
Davies, J.	389	0	0
Lewis, W. P., and Co.	382	0	0
Taylor, R. (accepted)	370	0	0
Watkins, J.	325	0	0
Hiles, J.	315	0	0

All of Hereford.

HIGHBRIDGE.—For extending the water mains in Highbridge 1,700ft., for the Axbridge rural sanitary authority Palmer, S. (accepted).

KEIGHLEY.—For iron railings at the new cemetery, for the burial board:—

Clayton, Son, and Co., Hunslet, Leeds (accepted) ... £226

KINGSLAND.—For alterations at the Duchess of York Tavern, Kingsland-road. Mr. R. A. Lewcock, 88, Bishopsgate-street Within, E.C., architect:—

Goodall, S. (accepted) £578 0 0

Gasfittings:—Winn, W. (accepted).

Counter and pewtering:—Heath, T. (accepted).

KNIGHTON.—For the supply and laying of 4in. and 3in. cast-iron pipes, for the new water supply, between the Frydd Reservoir and Cwmever, for the local board:—

Kell and Prince (accepted).

(Lowest tender received.)

LAMBETH.—For pulling down and rebuilding the Jolly Gardeners Tavern, Princes-street, Lambeth Walk. Mr. R. A. Lewcock, 88, Bishopsgate-street Within, architect:—

Anley, J.	£6,047	0	0
Ivory, J.	6,030	0	0
Gould and Brand	5,889	0	0
Spencer and Co.	5,838	0	0
Harris and Wardrop	5,644	0	0
Goodall, S.	5,470	0	0
Todd	5,414	0	0
Allen and Sons	5,348	0	0
Voller	5,262	0	0

LINCOLN.—For new Liberal Club. Messrs. T. Snigton and W. Bramald, Manchester, architects:—

Hockley, R., and Son, Grantham	£3,050	0	0
Reid, Blight, and Co., Plymouth ..	2,986	10	0
Bridgefoot and Son, Peterborough	2,485	0	0
Bowman, E., Stamford	2,457	0	0
Wright, W., and Son	2,405	13	0
Close, H. S. and W....	2,345	0	0
Horton, S.	2,285	0	0
Harrison, J. B.	2,247	19	0
Crosby, R.	2,241	0	0
Lansdown and Son (accepted) ...	1,970	2	4

Rest of Lincoln.

(All tenders are exclusive of heating throughout with hot water.)

LIVERPOOL.—For supplying and fixing wrought-iron unclimbable railing, with gateway, at the City Hospital North, Netherfield-road, for the city council:—

Smith, R. T. & Co., Whitchurch, Salop (accepted) £42 10

LIVERPOOL.—For repairs to Falkner-square, Great George-square, and Abercomby-square gardens, for the city council:—

Hignett, W. (accepted) £97 10 0

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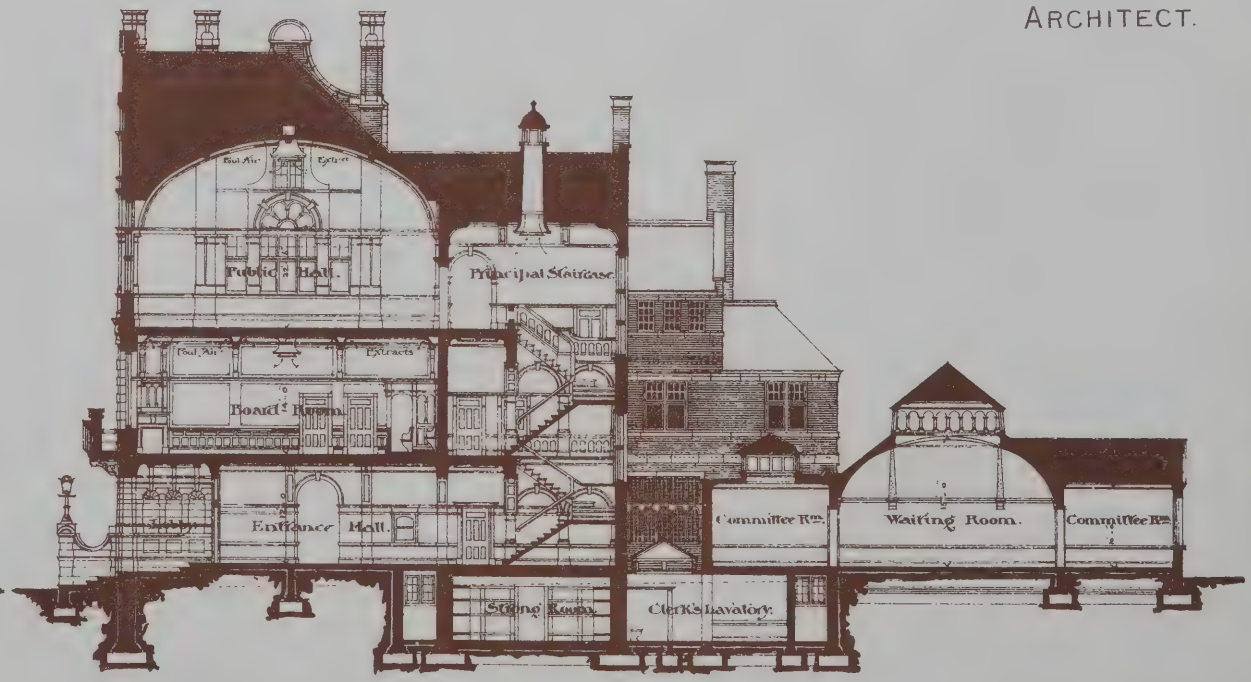
GLASGOW: 47 & 49, ST. ENOCH SQUARE.

OLDHAM SCHOOL BOARD OFFICES

F. E. L. HARRIS, A.R.I.B.A.
ARCHITECT.

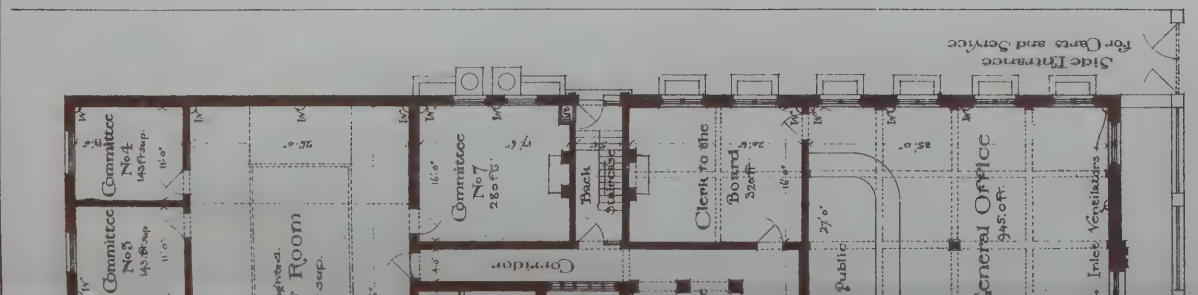


Elevation
to Union Street West

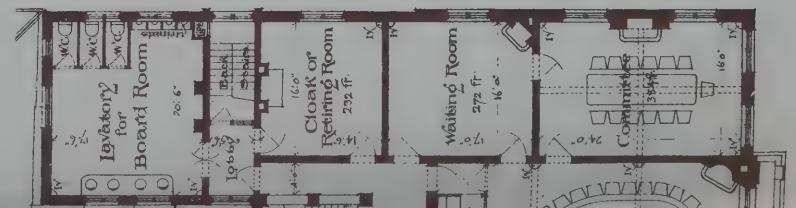


Longitudinal Section

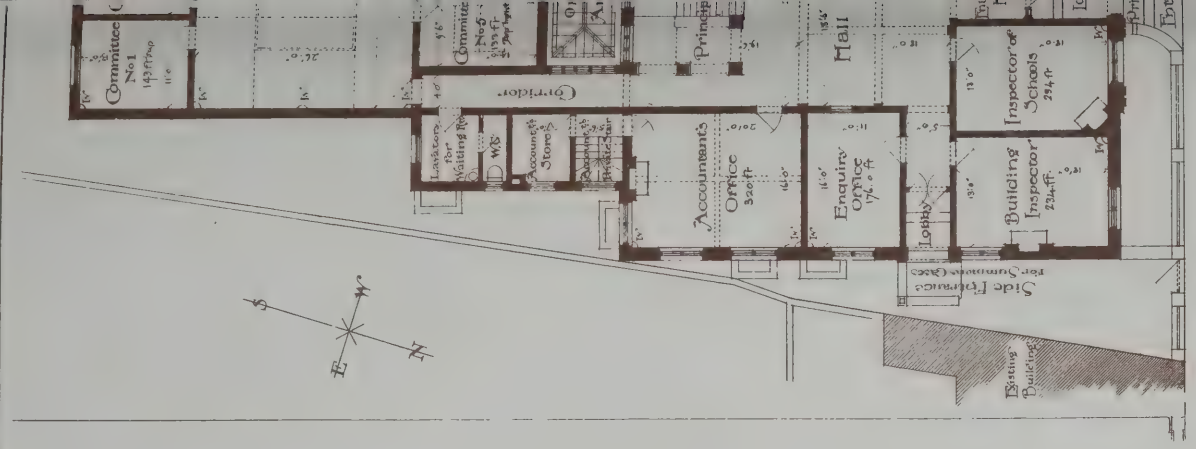
Land belonging to the Oldham Infirmary

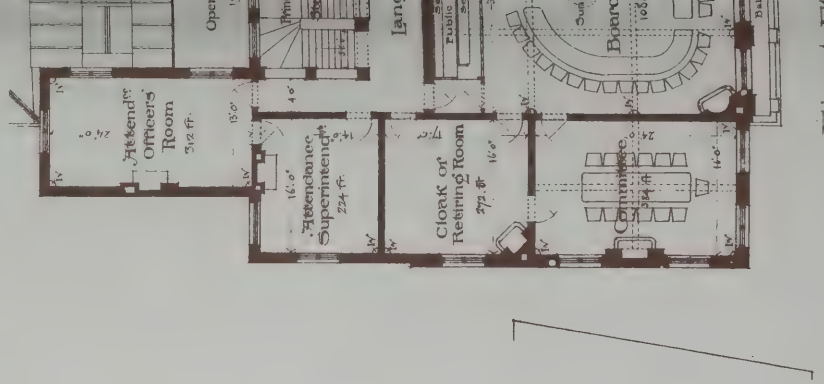


Ground Plan.

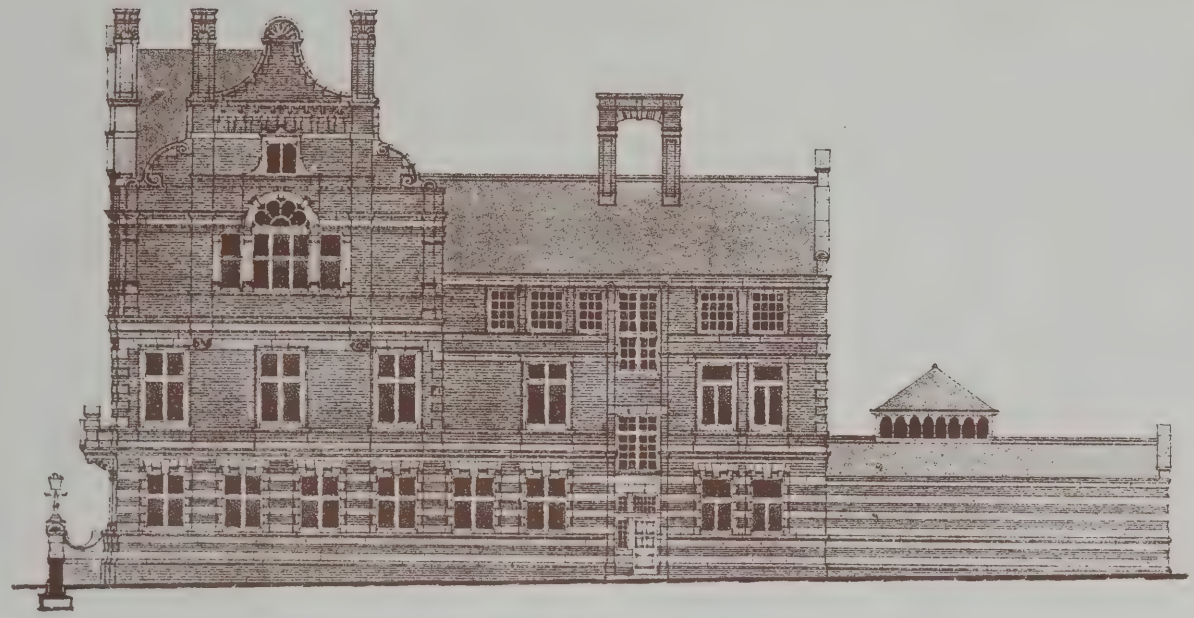


Plan

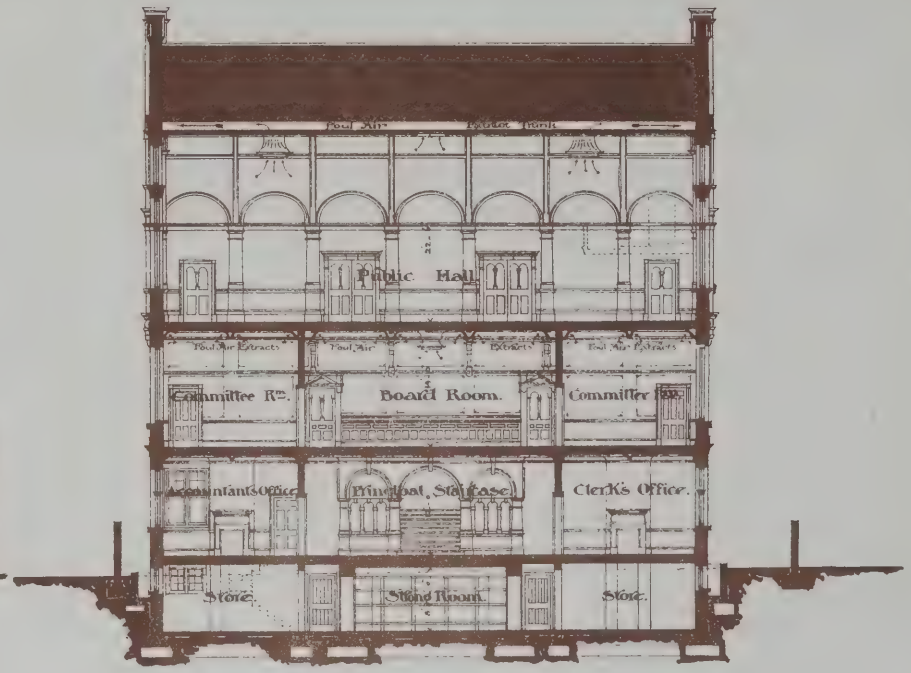




SELECTED DESIGN.



West Elevation
towards Infirmary



Transverse Section

Scale of 10 0 10 20 30 40 50 60 70 80 90 100 Feet

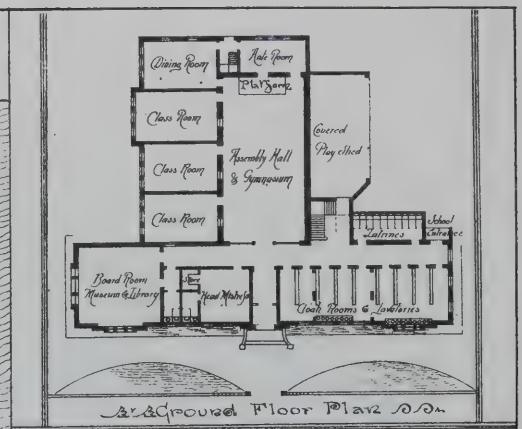
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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LIX.—No. 1863.
FRIDAY, SEPTEMBER 19, 1890.

STREET REBUILDING AND WIDENING.

DURING the last ten years many of the streets of London have become almost wholly transformed. Some parts of the City have been rebuilt entirely. One side of Ludgate Hill, for instance, has been completely changed in appearance. The greater portion of the old houses on the south side have been swept away, and in their place stately blocks of business premises have been erected. The setting back of the building line and the consequent widening of the roadway has been an important improvement as far as it extends, though not one that has yet benefited the thoroughfare to which it belongs as a whole. So long as there remains anywhere along the route a narrower part, any widening operation does not benefit. As the strength of a chain is determined by its weakest link, we may analogously affirm that the capacity of a thoroughfare must be estimated at its narrowest point, so that if beyond any setting back of houses the old lines remain, the improvement is doubtful, or, at least, has little practical value; and it is just this piecemeal mode of reconstruction and widening that renders London so disjointed and disorganised a city, full of half-completed and partial schemes, stopped ends, and hoardings—a good illustration of the want of co-operation between the two local governing authorities of the Metropolis, and the hostility that will ever prevail between private and public rights. The intention of widening a street under an Act of Parliament is soon noised abroad; property owners are placed on their guard, and quickly attach fabulous values to their properties; lessors and lessees combine to frustrate the authorities, and schemes are only partially carried out. It is a misfortune also that there is not more judgment exercised before properties are scheduled, as a great deal of unnecessary opposition is brought to bear against schemes that appear visionary and unnecessary on paper. The fragmentary manner in which street widening and rebuilding have been proceeded with may be noticed not only in Ludgate Hill, but in some of the streets leading from Charing Cross-road, the Shaftesbury-avenue, Bloomsbury, the streets between Holborn and Islington, and in various other parts in which public improvements have been contemplated. Instead of one thoroughfare being taken in hand and completed, half a dozen beginnings are made, a few houses are cleared, and the gap remains; next to houses in occupation hoardings are placed, creating a nuisance to adjoining owners and traders, and business is diverted into other channels.

But we rather dwell here on a few of the salient features of these new schemes, and we here mention only what has been done in one or two parts. Although Ludgate-hill has been only partially transformed on the south side, there will be shortly an almost unbroken line of new offices and premises from the Circus to St. Paul's. A large gap caused by the removal of a number of houses will shortly be filled up by the City Bank, which will occupy a site opposite the Old Bailey. We can hardly yet realise the effect of the widening and rebuilt side—certainly much of the picturesqueness of the broken line of frontage will be lost. On the north side the few new premises that have been erected have contributed to the general view. Messrs. Hudson Brothers' newly-built red-brick premises have one point worth noticing that may be usefully followed in our street architecture. The ground-floor story or shop front is set back within the front wall by an arcade of two wide arches, elliptical in shape, which support the façade. This arched treatment of the ground story, as it carries down the front by massive columns, is certainly more satisfactory than the usual breastsummer resting on a huge plate-glass shop-front. The arches and spandrels are of grey granite, supported on granite columns. The width of each arch and its height give ample room for the shop-front, which is recessed two or three feet back, and very little light is lost by the recession. The handsome gabled red-brick façade is a pleasant break to the lines, and when the hideous "sky signs" are removed, which the proprietors have magnanimously agreed to do, and have, in fact, begun to take down, the new front will be rather an ornament than otherwise. The subordination of the shop-front is not a thing which the ordinary City tradesman can quietly bring himself to acquiesce in; but if a few leading firms followed the example of the recessed window, throwing a foot or two more into the footway, one might soon see a marked improvement in our street architecture. Already the supremacy of plate glass appears to be on the wane; mullions, transoms, and ornamental squares filled with "leaded quarries" are taking the place of bare glass and its unmitigated vulgarity.

The present "dull" season has been taken advantage of by the City authorities for the repaving of Fleet-street and other parts of the City. By this arrangement there is probably less inconvenience suffered by the public than if the operation were deferred to a later season of the year; but, still, the process of renewal of the wood pavement becomes yearly a more serious block to the traffic of a main artery. What the consequences would have been if the Thames Embankment had not been formed one cannot imagine, except that only a section or two of the thoroughfare could have been undertaken at a time, while the traffic of vehicles would have to suffer repeated blocks during the day. The necessity of periodical repair of the roadways of our streets is a strong reason for the adoption of other alternatives, and must ultimately lead to the making of underground subways or high-level roadways along our principal thoroughfares. Those who propose these measures, and introduce Bills into Parliament, know very well that these alternatives must come sooner or later, and that if they meet with opposition, it will get weaker and weaker until the scheme is carried, and then people, even the aforesaid opponents to the Bill, will wonder why they could have been so stupid, and why the advantages of subway travelling had not been adopted before, and so much inconvenience, impeded traffic, street dangers, and cruelty to horses were endured so long.

The practicability of constructing high level or duplicate roadways is quite obvious, and our existing streets could practically remain as they are for heavy traffic, while the upper viaduct, say 16ft. high, could be used by pedestrians. There could be stairways at intervals connecting the upper with the lower roadway. Shops possibly could be built on the upper level, or heightened a story. But there is no necessity for a viaduct of great width. Why not construct galleries over the present pavement, high enough for goods traffic beneath, with stairs at intervals, and foot-bridges to connect the galleries at convenient points. Nothing more would be wanted to relieve the present crowded streets, and give room to both kinds of traffic. The galleries might rest on light iron girders and arches supported by light iron pillars at intervals; the architecture would not suffer—indeed, be somewhat improved by the piazza-like effect that would be produced, and it would not be long before architectural skill could find the means of converting this structural necessity into one of value. The covered footway is one of those features that might be revived; indeed we can imagine a two-storied open structure, the lower one used as a viaduct for pedestrians, and the upper an arcade covered. Our traffic, which is increasing to an alarming extent, is rendering an elevated footway a necessary requirement, if we strongly object to the alternative of a subway or underground railway. We are bound to look these necessities in the face; and if we do not want to imitate our American friends by having such hideous things as elevated railroads to compete with equally unsightly sky-signs, the sooner we can invent a more sightly means of locomotion the better.

From another point of view our streets present us with a standing record of the variety of colour and durability of the principal building materials. Who has not noticed, that has walked through Oxford-street, or even down Fleet-street, the variety of tone and texture of the fronts of business premises, from the dingy brick to the blackened Portland, through every intermediate shade of yellow and red? These different materials resemble somewhat what we find in nature. We find texture everywhere; even the stone quarry supplies us with instances of harmonies; the smooth stone or slate is fretted with lichen or moss, producing the most delicate harmonies of tint, the broken surfaces of cliff and rock subdue the light and colour by almost imperceptible degrees, and architects would do well to study the value of this quality more than they do. One writer truly says texture is a quality of surface independent of designed form, and if he means by this the texture derived from material, roughness or smoothness of surface, reflection of light, transparency of material, and other peculiarities, we can fully appreciate the merit. But there is another kind of effect in buildings that may be called by the same name. By texture we may denote the quantity and quality of the surface relief or ornamentation, the proportion of openings to voids or wall space, the direction of the main lines in the building, whether vertical or horizontal. Whichever kind of texture we employ—and we see no reason why there should not be both—let us adopt a rational means of using it in our architecture. A long row of stuccoed fronts painted a stone-colour may be intolerable if there is nothing to break the line of façade, no projections and shadows to give variety and tone. Stone of one colour, if employed in a row of buildings of the same measured regularity of windows, is equally intolerable; but if we have bays and recesses, and now and then a square or a crescent, even such a long stuccoed front as that to the sea at Brighton may be made endurable. The elements of texture in architecture are not only materials, different coloured sandstones and limestones, bricks and terracotta, stucco, and parquet, but the windows, recesses, and projections, which produce lines of shadow, which break up into lights and darks the surfaces of our buildings. A succession of bay windows or gables, for example, will break up the light which falls upon it, and by presenting a variety of dark shadows and light-reflecting lines considerably modify the tone of the street. We have observed that even a certain shape of window will produce a variety of tone in a number of similar houses. Strongly-marked eaves, balconies, colonnaded fronts, produce texture in the *ensemble*. Nevertheless, strange to say, these are not elements which the architect takes into consideration; they are neglected and accidental attributes of his building, which count for something in spite of himself, and are no less powerful in the general appearance of our towns.

THE SYMBOLISM AND ICONOGRAPHY OF EARLY AND MEDIÆVAL CHRISTIAN ART.—XIV.

By George Ashdown Audsley, F.R.I.B.A.
(Author of "Handbook of Christian Symbolism," and several works on Architecture and Art.)

APPLICATION OF THE AUREOLE.

WE now come to the consideration of the application of the Aureole according to Mediæval authorities, and our remarks shall be as brief as the subject permits of.

There can be no doubt that the Aureole has, in Christian Iconography, always been considered as strictly the attribute of the Deity; and, even when the greatest liberty was taken with it, it could only be extended with any degree of appropriateness to the symbols of the Persons of the Holy Trinity, or to heavenly personages who were understood to be direct repositories of the power and glory of the Almighty. With such an idea in view the 13th-Century artist depicted the Thrones, in the glass of Chartres Cathedral already spoken of, invested with crimson-coloured Aureoles, because they were recognised, in the iconography of his time, as the delegates of God's majesty and power. Such, then, is the strict rule respecting the application of the Aureole; but, as might be expected, this rule could not obtain without some exceptions. The most noteworthy exception is presented by the portraitures and representations of the Virgin Mary in the dignified position of "Queen of Heaven." Considering the high veneration in which the Virgin was held throughout the Middle Ages, it is not in any way remarkable that the Christian artists of this epoch should strain a point in her favour and bestow upon her the divine attribute.

The Aureole has never, to our knowledge, been applied to the representation of a human being in the flesh; but it has been shown in Fig. 29 (Article XI.) that the Aureole, in a certain treatment, has been applied to the representation of the human soul in its ascension to Heaven. Such an application, however, is incorrect, and forms one of the many mistakes and abuses which the student continually meets throughout the entire range of Christian art. More flagrant instances of the misapplication of the attribute are to be found; for instance, in a miniature in a tenth-century Bible, preserved in the British Museum, Satan is to be seen invested with an Aureole of a gloomy hue. The subject of this curious and interesting miniature is the Fall of the Rebel Angels; it occupies the whole of the first page, and is treated with considerable power. It is thus described by Mrs. Jameson:—"The Deity—for there is no nimbus to indicate which Person of the Trinity*—sits solemnly in an almond-shaped glory, upheld by two angels; while two more hide their hands, in token of respect, beneath their drapery. From the threshold of heaven the angels are seen falling in attitudes indicating no small knowledge on the part of the unknown artist of nine centuries ago. They are in human forms—denuded of wings and drapery—the angel stripped till nothing but man is left. Their faces are caricatures—those lowest being the most hideous; Lucifer himself lies beneath, brutified already with a tail—his person enveloped, strange to say, in an almond-shaped glory,† which a red dragon seizes in his jaws and encircles with his coils. This is a unique instance, it is believed, of Satan thus encircled with an attribute hardly seen even surrounding the persons of angels. But here all its glory is dimmed. It is dull and dark, and was probably introduced to distinguish the arch-rebel from his followers." There is little doubt that such was one of the intentions of the artist; but we do not think it was the chief one. By investing Satan with the Aureole, the limner evidently desired to show from what high estate the rebel angel had fallen—that while in heaven he was one of the Thrones, a delegate of the Most High; and by destroying the radiance of the attribute, and subjecting it to the dragon of destruction, he desired to show that in hell even the faintest remnant of his former greatness should be for ever swept away.

Whilst on the subject of exceptions we may direct attention to the rare use of the Aureole to the lesser symbols. In Fig. 38, in addition to the chief Aureole of quatrefoil shape, are four lesser circular Aureoles, appearing from behind the cusps, and containing the symbols of the Evangelists. We find ample proof that these circular portions were intended for Aureoles on referring to a very Early work, in the catacombs of Rome, illustrated in the accompanying Fig. 41. Between the arms of the cross are four discs containing

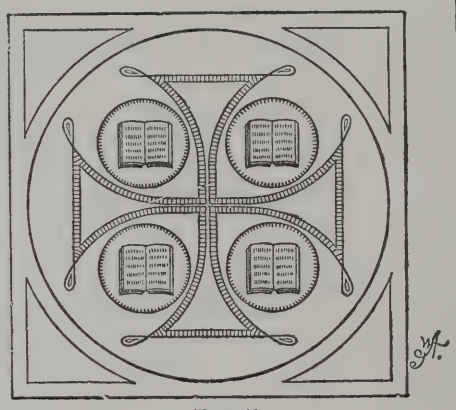


Fig. 41.

open books; these books are the Four Gospels, and, in the guarded symbolism of the Early Christians, represent the Four Evangelists. To express their importance and high dignity, their symbols are placed within Aureoles. The student of Christian Symbolism must not be led by these examples to conclude that when he sees a symbol, or monogram, placed within a circle the Aureole is intended, for in the generality of instances nothing beyond a framework or defining line is aimed at. Sometimes, however, the circle is evidently introduced as the emblem of eternity. As a rule, when a clearly-defined circle, or ring, is shown surrounding a cross, or a monogram of the Sacred name, the circle may be accepted as an emblem, and not as the margin of an Aureole. It is quite evident that, in Fig. 41, the large inclosing circle is simply part of a framework, and has neither a symbolical value nor anything to do with the Aureole. In all questions of this kind the student must use his own judgment in deciding. There is generally no difficulty in discriminating when one has mastered the rudiments of Christian Symbolic art.

The Aureole, in its true significance, and in its true character as a field of radiant splendour, is *par excellence* the attribute of God the Son. It is seldom given to Him in scenes which depict His life on earth; but consistently appears in those which follow the Crucifixion. The two scenes before the Crucifixion, in which Christ has been depicted invested with the Aureole, are the Baptism and the Transfiguration. In the latter instance, its introduction is perfectly consistent, and it becomes a legitimate agent in the artist's hands to set forth the supernatural radiance which surrounded the body of Christ. In the case of the Baptism, the introduction of the attribute does not appear so appropriate. We are not told that any radiance surrounded our Lord, so it is highly probable that the Aureole has been resorted to to record the declaration from Heaven: "This is my beloved Son"; as well as to express the brightness of the Spirit of God which descended like a dove, and rested upon Him. In the Benedictional of St. Æthelwold, Christ is depicted, at His Baptism, invested with both the Aureole and the tri-radiated Nimbus; while the Holy Spirit descends as a Dove, bearing a peculiar object in its beak (probably a double ampul), but without an Aureole or the divine Nimbus round its head. Of the Aureole of the Transfiguration we have already spoken at some length.

Immediately after our Lord dies on the cross, His divinity is proclaimed in art in an unmistakable way; the matter of fact or historical aspect of the Crucifixion gives way to the symbolic and dogmatic, and the great attribute of the Deity spreads its luminous field behind the cross on which hangs the dead Savour. In addition to this, the relation of Christ to the Godhead is set forth by the introduction of the portraiture of God the Father, and the symbol of the Holy Ghost. This treatment, however, does not obtain prior to the 13th century, and, indeed, very rarely until the 14th century. An example of the treatment just alluded to is given in Fig. 42, taken from the central compartment of a 14th century triptych, preserved in one of the chapels of the Cathedral of Naples. Here God the Father, in the form of an aged man, embraces the crucifix, and breathes his spirit on the dead Saviour. The Holy Ghost, in the form of a dove, hovers in the breath of the father, just where the upper limb of the cross should be. The lenticular Aureole, with a plain field, and supported by Seraphim, almost entirely incloses the group. Above the Nimbus of the Father is the emblem of Christ—the pelican vulning its own breast. D'Agincourt gives another example of this treatment, from a 14th century painting by Barnabas de Mutina, in which the lenticular Aureole, covered in its field with divergent rays, is introduced.

In the scenes subsequent to the Crucifixion, figures of Christ are commonly invested with the Aureole. In the Resurrection the figure of our Lord is represented ascending from the tomb, invested with the attribute, and bearing in his hand the cross and banner of victory, as in the fine painting by Perugino in the Vatican. The next great event which art records, and in which the Aureole almost invariably appears in Mediæval works, is the Ascension. It is, however, occasionally met with in the earlier scenes in which Christ appears to His disciples. In the miniature of the Incredulity of St. Thomas, in the Benedictional of St. Æthelwold, Christ is depicted in a lenticular Aureole, invested with the tri-radiated Nimbus, and carrying the cross of the Resurrection. The lower part of this Aureole, showing the feet of Christ resting on an arched member, is given in Fig. 33 (Article XI). From the same superb manuscript we have given, in Fig. 32 (Article XI.), the drawing of Christ invested with the Aureole, as presented in the interesting miniature of the Ascension. We have before directed the student's attention to the peculiar treatment of this Aureole, which has evidently been adopted by the limner with the view of showing that the attribute is behind and following the figure. In the fresco of the Ascension, by Giotto, in the Chapel of the Arena, at Padua (now almost entirely effaced), the figure of our Lord is depicted more fully in side view than that in the Benedictional, but no attempt has been made by the great master to represent the Aurole in perspective as it spreads its elliptical and many-rayed field

* Mrs. Jameson evidently was under the impression that each Person of the Trinity was invested with a distinctive Nimbus, probably holding that the so-called "cruciform" Nimbus denoted God the Son. We have shown that such a Nimbus belonged alike to each Person, and was not distinctive of any one.

† Mrs. Jameson uses a wrong expression here; she should have said *almond-shaped Aureole*. The word "glory" is not applicable, as we have already shown.

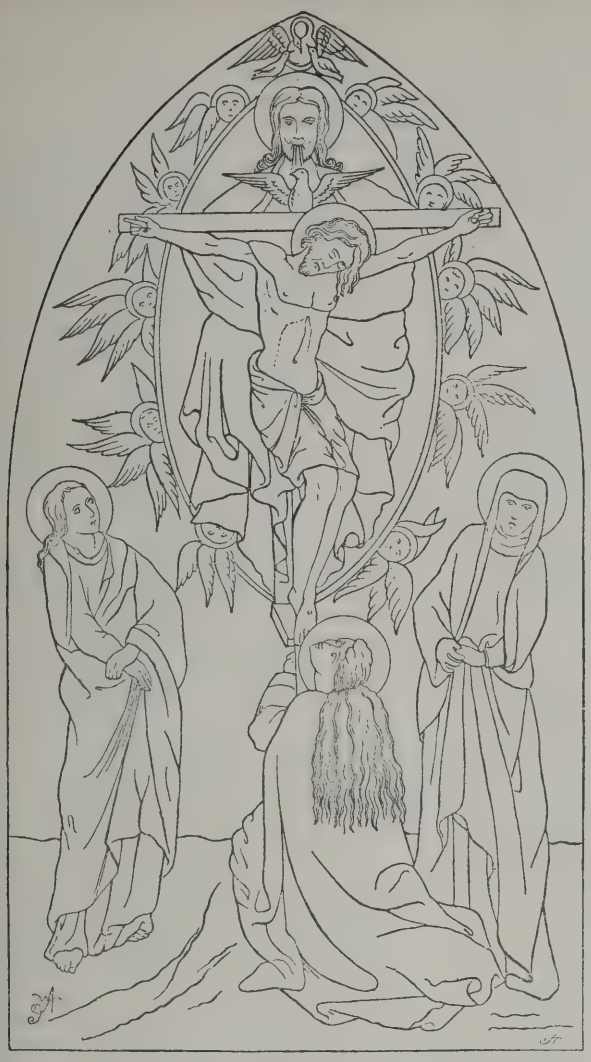


Fig. 42.



Fig. 43.

on the off side of the figure, almost entirely inclosing its outlines. The Aureole of the Ascension is frequently borne upwards by angels, as in Fig. 31 (Article XI.); this treatment, however, imparts a very material character to the attribute, quite at variance with its true or generally accepted nature. It is usually met with in Italian art. In a painting by Perugino (1495), preserved in the museum at Lyons, angels surround but do not support the Aureole; and around its broad border are thirteen heads with six wings each, probably intended for Seraphim. The figure of Christ is erect, facing the spectator, and the Aureole occupies its normal position, enveloping it in a field of splendour. The tradition of early art has, so far as the Nimbus is concerned, disappeared; it is in this instance represented as a ring hovering over the head of Christ.

Speaking of the Aureole of the Ascension supported or carried by angels, Mrs. Jameson correctly remarks:—"It would seem as if the words, 'He was taken up,' were, as time progressed, interpreted to mean the interposition of angels and help of heavenly machinery. Christ no longer takes personal part in the act of movement; but, by the 12th and 13th centuries, appears seated passively in the mandorla" (almond-shaped Aureole), "which is carried along by the sole agency of angels. Here, therefore, the main and actual idea of the Ascension is sacrificed. The glory in which the Lord sits is held by angels like a *tableau* presented to the view of those below, whom He is blessing from that height; but there is no sign that He is receding from them. It is a more sumptuous composition than that of a single figure rising through the air, but is not so impressive, and was probably derived from the stage machinery of sacred plays."

Christ has gone up, He is throned in the glory of heaven, never to be seen of man until His second coming; but Christian art could not rest satisfied with the representation of His Ascension. Inspired by the mysterious passages in St. John's vision, it early sought to depict "Christ in glory," and "the Majesty" of His return to judge the world. Of the modes adopted by Christian artists to depict the Glory of Christ, we shall have to speak in a future article—here we must confine our remarks to the strictly iconographic Glory, as rendered by the two attributes already treated of. Christ is no longer in the flesh, although retaining to the eyes of faith His earthly body and the marks of the nails and spear. He is God the Son, seated in the glory of the Father, one with Him and the Holy Spirit for ever. Now comes the Aureole into full significance as the attribute of the Deity; as the visible exponent of that radiance, to which sunshine is as darkness, and of which even the words of revelation, in borrowing earthly similes, convey but an imperfect idea to the mind. The Aureole, in its simple expressiveness, tells us, in the language of symbolic art, of the radiance never fading, issuing from the throne of God; and seeks, by a literal translation of the Vision of St. John, to concentrate the mysteries of heaven around the person of the throned One.

The iconographic Glory presents Christ, robed in white garments, wrought with golden embroidery, studded with jewels, and clasped with a precious morse; His head invested with a Nimbus of gold, on which are the three rays indicative of the Triune; seated on a throne or on a rainbow, "in sight like unto an emerald," bearing in His hand the sceptre or orb of sovereignty, and inclosed in an Aureole, filled with vivid rays or powdered with stars of gold, and surrounded with a cordon of Seraphim and Cherubim.

The Lamb, as the chief symbol of our Lord, is frequently found in Mediæval works invested with the Aureole, generally of a circular form, as in the miniature of the Triumph of the Lamb in the Evangeliarium illuminated for Charles the Bald, and in the case of the symbol held in the hands of the statue of St. John the Baptist in the north porch of Chartres Cathedral (see Fig. 2, Article IV.)

Portraitures, or representations of God the Father in the human form, are rare in comparison with those of God the Son; although artists after the 12th century threw aside the considerations which induced those of earlier centuries to refrain from attempting portraitures of the Invisible God. When we find representations of God the Father invested with the Aureole, the attribute differs in no way from that applied to the portraitures of our Lord; indeed, the resemblance in the treatment of their respective portraitures and the exact similarity of both their Aureoles and Nimbi, render it sometimes a difficult matter to decide which of the two Personages is intended. In early work the student need, however, have no hesitation in accepting every such portraiture as that of God the Son. If the reader will now refer to Fig. 5 (Article V.), he will find a curious illustration of what we have just stated. If the figure seated in the Aureole and holding a book were shown alone, that is, without the accompanying figure, to any student of Christian Iconography, he

would most assuredly pronounce it to be a portraiture of God the Son, notwithstanding the absence of the nail-marks in the hands, which he well knows are by no means invariably present in representations of our Saviour after His Passion. The figure here alluded to is unquestionably intended for God the Father, as will be seen by the remarks we have passed on the subject in Article V.

We have not been able to find any work of art in which a portraiture of God the Holy Ghost is represented, invested with a special Aureole; indeed, separate portraitures are not known to have ever obtained. The symbol of the Holy Spirit—the Dove—is, on the contrary, of constant occurrence in all departments of Christian art. It is introduced without either a Nimbus or Aureole; with the tri-radiated Nimbus only; with an Aureole only; and sometimes in Glory—with both Nimbus and Aureole. In Fig. 42, the Dove is without a Nimbus, but the great Aureole incloses it as well as the figures of God the Father and God the Son. In the miniature of the Baptism of Christ, in the Benedictional of St. Æthelwold, the Dove is neither invested with a Nimbus, nor an Aureole, whilst in that of the Descent of the Holy Ghost, it has a lenticular Aureole only. The Dove invested with a circular Aureole is of frequent occurrence in Christian art. In representations of the Trinity, the Dove is sometimes invested with the Aureole, whilst the accompanying portraitures of God the Father and God the Son have the Nimbus only. An example of this is furnished by the fresco, in one of the churches of Mount Athos, illustrated in Fig. 17. (Article VI.) In this painting the Dove is placed in a circular Aureole, from which rays issue in all directions, whilst the portraitures have Nimbi only. It is just possible that the artist here intended to extend the signification of the attribute to the figures by giving them the background of rays diverging from the bright disc behind the symbol of the Holy Ghost.

In Fig. 21 (Article VII.) is given a curious and unique rendering of the Trinity, showing the combination of three Aureoles of circular form. In the greater Aureole, a youthful figure of God the Son is seated on the wings of Seraphim, holding in the right hand the combined symbols of the Four Evangelists, nimbed. His head is invested with the Greek tri-radiated Nimbus. The field of the Aureole is divided into zones, rayed, and powdered with monograms and stars. Above the head of Christ appears the symbol of the Holy Ghost invested with a circular Aureole and Nimbus. Higher still is a half-length portraiture of God the Father, a venerable figure, invested with a circular Aureole, smaller, but treated very similar to that of God the Son. The Nimbus of God the Father has already been described.

The only other personage on whom Mediæval artists have considered it correct to bestow the Aureole, is the Virgin Mary, as "Queen of Heaven." According to strict rule, such an application is incorrect, but it is quite easy to realise the arguments which obtained, in the Latin Church, in favour of the adoption of the recognised insignia of deification, power, and glory in connection with her portraitures. In subjects where the Saviour is also depicted, the Virgin is seldom invested with an Aureole: a notable exception to this general rule is furnished by the "Last Judgment," by Orcagna, in the Campo Santo, at Pisa. In this fresco both Christ and the Virgin are depicted, side by side, in large lenticular Aureoles, exactly similar in dimensions, form, and artistic treatment. An outline drawing of the portraiture of the Virgin is given in Fig. 43. Neither of the figures is invested with the Nimbus proper, its place being taken by a diffused radiation formed of divergent lines of light, which extend beyond the confines of the Aureole. The figures are seated on bows which span the fields of their Aureoles, whilst their feet rest on clouds. In the fresco of the Assumption of the Virgin, by Giunta di Pisa (A.D. 1230), in the church of St. Francesco, at Assisi, one broad lenticular Aureole invests both the figures of our Lord and the Virgin. They are seated together, with their feet resting on a bow, which spans the lower part of the Aureole. The attribute is borne aloft by four angels, in a manner similar to that shown in Fig. 31 (Article XI.) In certain pictures of the Assumption, as in those of Perugino and Pinturicchio, the Aureoles which invest the figures of the Virgin are surrounded with cordons of angels.

Of the application of the Aureole to the representations of the higher angels we have already spoken, and it only remains for us, in closing this section of our subject, to say a few words upon the application of the attribute to representations of the human soul on its way to heaven. The instances of the latter are rare, as might be expected, for in them artists strained the rules of iconography much beyond their proper bounds. When they are met with, we may justly accept their signification as different from the Aureoles of divine personages and their symbols. Such an Aureole as that surrounding the soul of St. Martin (Fig. 29, Article XI.); and the one which surrounds the soul of St. Margaret, in the window which contains her legendary history, in the Cathedral of Auxerre, may properly be understood to represent the way of light, the radiant clouds amidst which the souls of the saints ascend to heaven. The Aureole of St. Margaret has, like that of St. Martin, a margin of conventional clouds, and is borne aloft by angels.

(To be continued.)

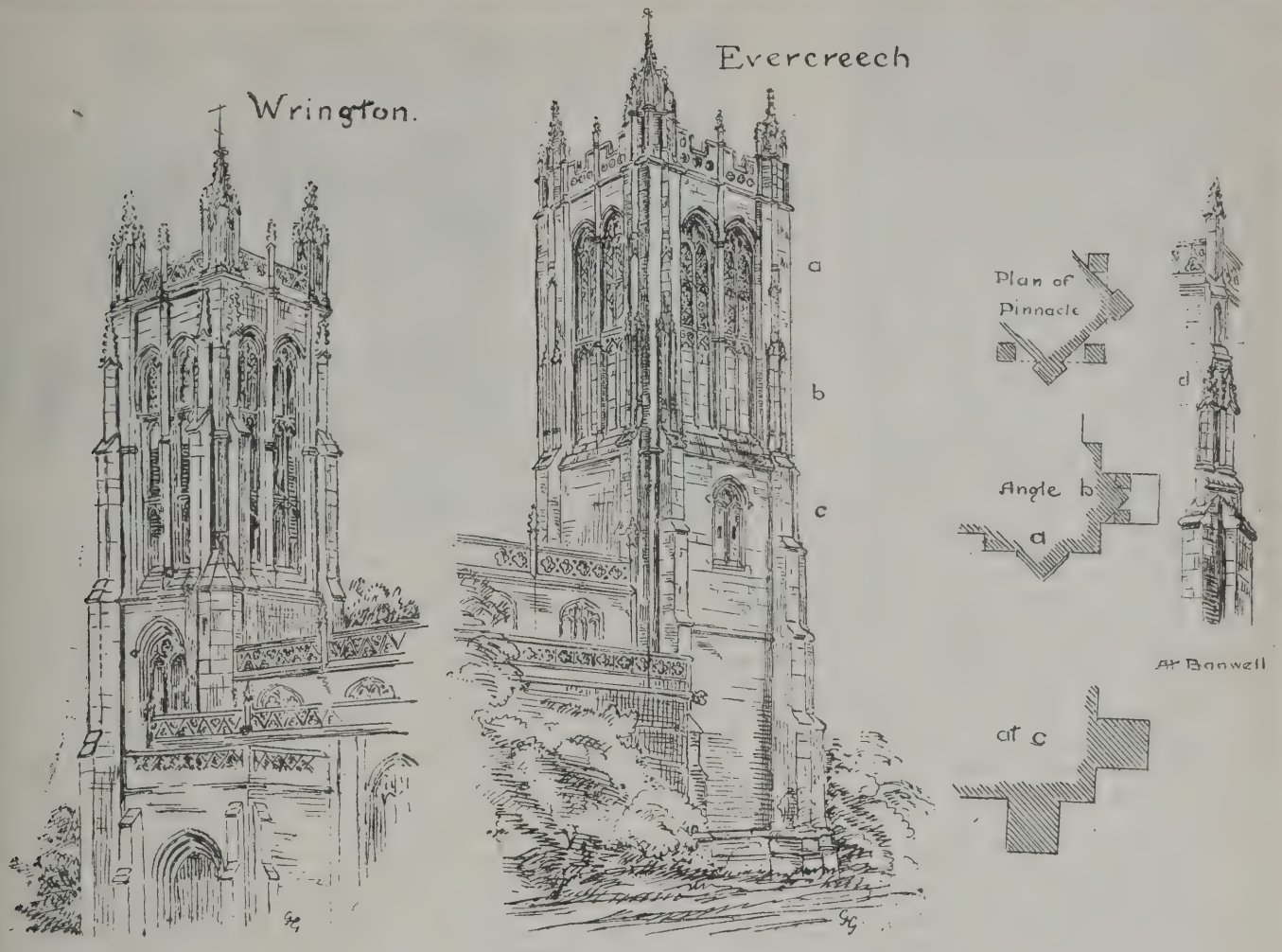
TYPICAL CHURCH TOWERS.—II.

SKETCHING as we have done the characteristic features of a few Somersetshire towers, we may now in more detail endeavour to show the points which differentiate them from other types. The first distinguishing feature we meet with which separates one class from the other is the treatment of belfry, the second the angle or buttress arrangement. Let us compare, for instance, the tower of Cromer Church, Norfolk, or of Framlingham, Suffolk, and those of Huish Episcopi, Cheddar, or Banwell. The former have breadth of wall surface, and double or single windows simply pierced through the walls; the Somersetshire examples have couplets or triplets of partially pierced and panelled windows filling up the belfry space, or arranged to agree with the horizontal lines of cornice by means of engaged pinnacles of equal height. Thus the belfry windows of Banwell, Cheddar, Chewton Mendip, and other towers were designed with reference to the rectangular wall space composing the upper story: they appear to fit the space, but we fail to observe the same attempt in the East Anglian structures, where the massive wall and pier were more in request. Secondly, as to the angle treatment. The East Anglian tower has the usual single angular or double buttress, at right angles, finished by splayed weatherings. At Framlingham the fine panelled flint angle buttress of six stages is terminated by a small angle-set pinnacle, which just breaks the corners of the battlement; at Cromer splayed weatherings terminate the buttresses, the angle of tower being carried up square to form the pinnacles. At Southwold, the panelled angle-buttresses, like those at Framlingham, are stopped level with the parapet, and are without pinnacles, though these terminals were probably intended, as on many other East Anglian towers, which we shall show later when we come to speak of them. The angle of the Somersetshire tower is, as we have hinted, more elaborated. Taking the simpler kind, such as that of Cheddar and Banwell (see sketch) the coupled rectangular buttress changes to a diagonal arrangement in the upper story, as we have sketched at A and B, p. 278, which describes the former of these examples. At Banwell the arrangement is very similar: a pair of engaged pinnacles stand on the first weathering of the diagonal buttress, which springs out of the lower ones (see sketch). At Langport the tower of the church is quite of this character, and is of very elegant design. The belfry has a triple arrangement of windows on each face, with pinnacles between them, which spring out of a weathered set-off, and the angles have buttresses set anglewise upon the right angle coupled buttresses below; and these terminate in pinnacles above a plain battlemented parapet. Farther south the towers show a more usual design. Both at Yeovil and Trent the belfry stage is marked by a single window, and the buttresses are double ones with plain weathered heads.

While speaking of the design of the belfry stories, we may notice the very common employment of the Early Perpendicular window, which is found, with few exceptions, in nearly every instance. Thus, the windows at Cheddar, Banwell, Huish, Yeovil, and Langport are of similar tracery—two-light cusped windows with muntins from the points of the sub-arches, the upper piercings being also cusped. Another peculiarity is the triangular-shaped buttresset or pinnacle engaged to the wall between the windows, or on the face of buttress, as in the examples of Wrington and Evercreech, both of which we show. The windows of the last two towers have transoms dividing their height into three. The very common use of perforated parapets, composed of triangles with trefoils pierced in them alternately, as at Wrington and Banwell, deserves notice. In other instances, like that of Huish and Cheddar, the parapet is pierced by quatrefoils, bands of the latter ornament also occurring between the stories of the first-named tower, producing a very rich effect. Another variety consists of upright openings or arcading, pierced or blank, as seen at Yeovil, Chewton Mendip, St. Cuthert's, Wells, in which latter the openings follow the battlemented outline. These varieties of treatment are deserving the attention of the architect.

The stone towers of Somerset afford, in fact, a very interesting study, more particularly in the arrangement and cutting of the angles, parapets, and pinnacles. The sub-division and elevation of the buttresses at the upper angles of towers lead the eye from the lower and plainer portions by an imperceptible gradation to the summit, and impart a graceful outline to the whole. Fineness in stone-cutting has scarcely been carried to the same extent elsewhere.

Comparing the towers of Wrington and Evercreech, which our present sketches enable the reader to do in their full proportion, it will be noticed that there is very much in common between them. There is the lofty belfry story with its two enormously high windows, partially pierced and divided into three stages by transoms, the entire height of which occupies about one-half of the total height of tower, the deep weathered set-off reducing the thickness of the tower walls in the upper part, the square angle piers to belfry, the same arrangement of buttresses below, and a like number of stories, and within 10ft. of the same height, Wrington Tower being 140ft. and that of Evercreech about 130ft. high. Probably the last named is a little later in date, if we go by the details. We place them side by side with the object of comparing the points of difference in the details. These chiefly reside in the design of the angle buttresses of the belfry stage. It will be noticed that both have the same square projecting pier at each corner, but that the external buttresses or engaged



pinnacles are not treated alike. At Wrington the main buttress on each face continues to half-way up the belfry, is there weathered, and carries an engaged triangular pinnacle, which finishes below the cornice. The corner turrets are square, and have four engaged pinnacles at the angles of each, which rise from the cornice member. Turning to the tower of Evercreech, the plain, square buttresses stop at the belfry level, and from each of them starts a triangular-shaped buttresset, flanked by two pinnacles for a short distance bonded into the work *b*, beyond which the buttresset is carried right up the centre of each angle-pier through the cornice, and terminates as a small pinnacle, one of eight, which surround each turret (see plan). These form a richly-clustered group at each corner of the tower. We cannot but admire the arrangement. More elegant and graceful than the former, the triangular buttresset starts less abruptly from the buttress head, and is diminished by two ornamental set-offs, the lower third being further accentuated by the small square pinnacles joined to the shaft just described. These are managed with much artistic skill, and are separated by deep vertical quirks and sinkings, which throw them out by lines of shadow. Plans *a*, *b*, and *c* show the manner these are worked at those levels. Each corner pinnacle is engaged to the centre shaft by its inner angle *b*, and worked from the same stone, but projecting on each of its outside faces sufficient to throw the return sides into shadow. The plan of corner-clustered pinnacles is no less artistic and charming in its outline. The sunlight glinting on the faces of the semi-engaged pinnacles and thrown up from the shaded mass of the centre turret produces a pleasing variety to the mass. Each turret is connected by the vertical shaft or buttresset to the angle, instead of being an independent design springing from the weather cornice. Both towers also have the intermediate pinnacle between the belfry windows breaking the parapet. On the whole, we may suppose, from the more graceful arrangement of the angles and pinnacles seen at Evercreech, that the work was at least an improvement upon, if not later in date than, those of Wrington. Certainly, taking them both as examples of tower design, and tracing so many close resemblances in the structures, we are tempted to conclude that the architects and masons engaged on these churches belonged to one school, if they were not indeed the same individuals. Interiorly the church of Evercreech has four bays to nave and aisles, and a low chancel of three bays. The tower, as usual, opens into the church by a lofty archway, with rich moulded jambs, as there is a carved gallery front in the arch like the one at St. Cuthbert's. The nave roof is flat and coloured, of the tie-beam type.

A rather more complex but, perhaps, less elegant arrangement of angle pinnacles occurs in the towers of Chewton Mendip and Huish. They are more isolated from the angle, and are set diagonally on the buttresses. They terminate below the cornice, and the parapet and upper pinnacles have no connection with them, as we shall show later on.

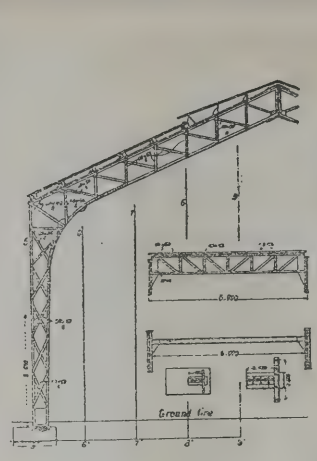
THE MARBLES AND ORNAMENTAL ROCKS OF THE MEDITERRANEAN.*

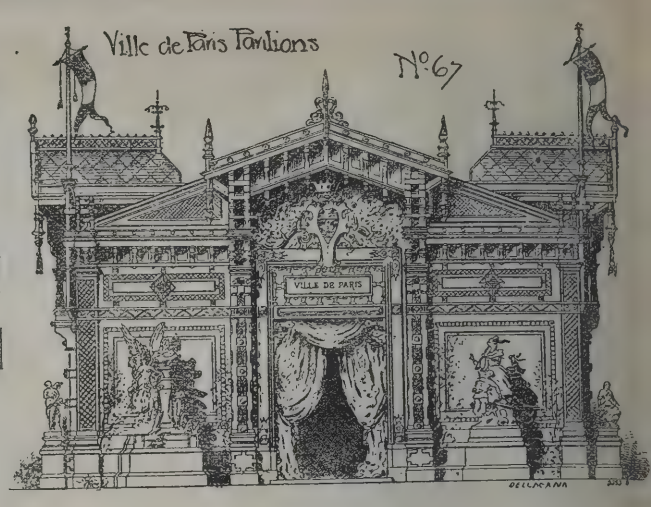
By W. Brindley, F.G.S., F.R.M.S.

WHILE the waters of the Mediterranean Sea are opalescent, abounding with fish of the most exquisite colours and hues, and with seaweeds equally beautiful, the rocks which surround this basin sea, along with those of its islands, are equally beautiful in colour, and have from the earliest times supplied nearly the whole of the valuable marbles used for the architectural adornment of the cities of Greece and Rome. And if we include a moderate inland belt of the coast line, within the watershed to this sea, we can then call almost every fragment of ancient marble found in Greece, Rome, and their colonial cities Mediterranean marbles. The Classic Greeks may be considered the pioneers in the working of marbles, the origin of which is easy to understand, as white marble was the stone most easily obtainable in large sizes for architectural purposes, and no doubt this choice material, which was capable of taking and retaining the most delicate chiselling, with its ivory-like tinting and semi-transparency, played its part in the refinement of both architecture and sculpture in the ancient world. It is possible that the outcome of their refined colour decoration may have been requisite to subdue its dazzling brightness under an Eastern sun. The Romans in their turn endeavoured to obtain lasting colour in their buildings by the introduction of coloured marbles, which the Greeks had all but neglected. The result of this introduction was the magnificent colour decoration of Rome and Byzantium, the influence of which has continued through all architectural changes and styles down to the present time. The demand is now so great for varieties of choice coloured marble, not only for architectural decoration but for articles of *virtu* and furniture, that not only has search been made for the various quarries of the ancients (all of which except one have now been rediscovered), but hundreds of new ones have been opened and worked in every part of the explored globe. In the midst of all this modern adventure, the ancient quarries of the Greeks and Romans on the shores of the Mediterranean Sea still retain their pre-eminence. Greece has her white marble quarries at Mount Pentelicus; these quarries supplied the material for the Acropolis of Athens and the Great Temple of Jupiter Olympus and the Pantheon of Rome; those of Paros produced the finest material for sculpture, and in my opinion the marble for Herod's Temple at Jerusalem. Several of the Greek islands produce good white marble and every

* Read before the British Association, Leeds, 1890. This paper is intended as a short sequel to the opening address of the President of the Geographical Section, Sir Lambert Playfair.

variety of grey is found in these white formations. The Cippollinos were quarried chiefly at Carystus, from whence the monoliths for the Temples of Antonius and Faustina in Rome were taken; these are the largest marble columns known. The beautiful Verde Antica green porphyry comes from near Sparta, and the green marbles from the shores of Magnesia, Thessaly, and Sinos. The various Rosso Anticos have all been rediscovered in Laconia, on the coast between Cape Matapan, and Gythium. The grand quarries of Porta Santa are still workable, on the Island of Chios block marbles are found in several places, and varieties of Pavonazzetto at Skyros. The famous quarries of Synada in Asia Minor, which supplied Rome with her monoliths of Pavonazzetto marble, were found last year by Dr. Leoni, of Smyrna. There are 16 quarries of immense size, side by side, which are about to be reworked. Between Smyrna and Ephesus there are white marble quarries; but the most important blocks used for the "Temple of Diana" came from Pentelicus or Paros, although some may have been taken from Samos. At Tarsus there are quarries of ivory - white marble, from which the Temple was built. All the white marbles used in Egypt came from the Mediterranean. History tells us little about the old quarries of Greece; but the architectural remains of Greek and Roman cities show plainly that their produce was enormous. Eight-tenths of the white marble found in Rome is Greek, and the quantity of worked material recklessly burnt as lime for centuries must have been enormous. Byzantium was chiefly built with the marbles of the Sea of Marmora, and these quarries are still worked for Constantinople. No doubt this sea takes its name from being really a marble basin. The produce of the quarries of Egypt brought down the Nile for Roman use may be called Mediterranean, the most valuable of which were those of Imperial Red Porphyry. These are now being reworked, the first important consignment of 270 small blocks having within the last month arrived in London, where they may be seen. The remains of ancient working on some of these blocks is most interesting, showing that the workman not only wedged, scabbled, and chiselled as is now done, but even sawed blocks of this hard material asunder. The Breche Verde of Egypt, the granites and Oriental alabasters were all extensively worked and floated down the Nile for shipment to Rome and other cities. Ancient Numidia (now the eastern portion of Algeria and west of Tunis) produced Giallo Antica. These quarries are very extensive, the Romans having quarried right through the mountain. From hence came the yellow monolith columns of the Pantheon in Rome, and those of the arch of Trajan (these are now reused in that of Constantine). At a number of places along the Algerian coast there are ancient quarries of rich-coloured marbles, chiefly reds and yellows. From those of Cape Chenona, near the ancient Julia Cæsarea, the capital of Mauritania, was brought the rich red marble (rouge Etruscan) used for the decoration of the new rooms and staircases at the National Gallery, London. Further W. of Kleber, near Oran, there are the famous quarries of Sig del Monte—these marbles are unquestionably the richest (as regards reds, and breccias of reds, yellows, and browns) that have ever been discovered in any part of the world. These are now largely used in America. The Algerian onyx marbles are found near Oran, and red ones have recently been discovered at Guelma, in the W. of Algiers. The Mediterranean coast of Spain for 30 miles inland abounds with marbles of every colour. There is first the sparkling crystaline statuary of Macael, with which the Alhambra was built, the rosy-veined of Tarragona, the rich brocatellos and jaspers of Tortosa, the red and orange-blended brocatellos and onyxes of Malaga, the griotte deep reds; blue turquin and fossil of Gevona, also the precious green serpentine of Granada, which has scarcely a rival in richness of colour and firmness of texture. Many of these were worked by the early Romans and Moors. On the French coast are quarried a number of deep and light reds, brecciated yellow, and rich conglomerates. The ancient quarries of Luni, now Carrara, are, at the present day, the most renowned in the world, and, considered with the adjoining ones of Massa and Saravezza, cover an area of 27 square miles. The marble rocks commence a little above sea-level, and extend up the mountain to an altitude of 7,000ft., the whole of the sides and valleys of these mountains being studded with innumerable quarries, giving employment to 15,000 people, the results of whose labour probably supply 90 per cent. of the white marbles used in the world. These quarries were known and worked by the Romans, and have been worked continuously since before Christ; but the immense development has taken place within the last fifty years, or we might even say the last thirty years. Probably no single individual has visited the whole of these quarries, not even interested residents. To see and examine them all would take an entire season. The most valuable marbles of the Apennine range are those of Mont Altissimo at Saravezza, situated at an altitude of 7,000ft. Here the most beautiful and durable statuary is found in immense beds, masses being extracted of the purest quality, containing thousands of feet cube, the value per foot being £2 or even more; single blocks worth £500 each are often obtained, and occasionally up to £1,000. This marvellous mountain of Altissimo produces also a statuary grained marble of bluish tint, nearly the whole of which is sent to France for statuary purposes, as it is extremely durable for exterior work. The famous coloured breccias of grey, red, and purple, the Rhondona, Fior de Perchia, and others are found here in large masses, also the blue-veined Bardillio and a Cippollino. The promontory of the Gulf of Spezzia (Porto Venere) is one massive rock of black and gold marble. Near Genoa are the quarries of green serpentinous limestone; the one containing red spots is called in commerce Egyptian. Similar marbles are found in Corsica, also the purple-veined (Fior de Persico), and a rich mixed green, and amethyst-coloured granite used largely in the Medici Chapel at Florence; the orbicular granite (Napoleonite) is also obtained from this island. Between Sienna and the coast there are the rich quarries of Sienna, yellow (this beautiful marble is not found in Ancient Rome). At Voltera, near this coast, is obtained the pure white Italian Alabaster; and at Prato the deep olive-green serpentine, used so extensively at Pisa and Florence. At Mount Rommola, near the coast, are ancient quarries of statuary white. Sicily contains several good marbles; near Trappini, on the W., the choice jasper marble is obtained, also the rich-coloured silicious jaspers. At Sanromena are quarries of reds and browns. The rocks of Brindisi, and those of the opposite Adriatic coast up to Istria, are a fine-grained white limestone; this is the stone with which the Venice Palaces are built, the white sort being the palambino found in mosaic pavements. E. of Trieste a useful red marble, like the brocatello of Verona, is worked very extensively. I hope, in conclusion, this short but very imperfect summary may give some idea of the money wealth in the Mediterranean rocks.





CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—XIV.

THE MISCELLANEOUS PAVILIONS AND BUILDINGS ON THE CHAMP DE MARS.

HAVING considered in some detail the buildings which may appear to some of us the most important constructions in the Exhibition, we have next to examine shortly the various other buildings which have been erected at the Exhibition; and it has appeared to us that the best way, at all events for the present, of classifying these buildings is by locality in preference to classifying them in regard to their construction, although in many cases we are sure that the latter would have been preferable; but as chance would have it, these buildings are to a great extent placed near one another as regards their construction. For instance, at the N.W. angle of the Champs de Mars are the buildings erected by the South American Republic, which are mostly constructed in iron, terracotta, and glass, and without much heed to any particular style of architecture, which was natural, considering the materials employed. In the N.W. angle of the Champ de Mars are several entirely wooden constructions belonging to Norway, Sweden, &c., bnt there are not many of this type.

Across the river on the Trocadéro Gardens are two buildings, one entirely in wood, the Forestry Pavilion, and the other in brick and iron framing —the "Ministry of Public Works" Pavilion. On the Quai d'Orsay, besides the "History of Human Habitation," which will be treated under a separate heading, there are several iron-framed buildings, and in making our way to the "Esplanade des Invalides," the only buildings which are not in iron are the Spanish Pavilion and the Portuguese Pavilion.

On the Invalides we come to what may be called the archæological part of the Exhibition, consisting of Algerian Palace, the Tunis Palace, Annam and Tonkin Palace, Cochin-China Pavilion, &c, all of which are exceedingly interesting as regards their architecture, but not worthy of study as regards their construction, being mostly in wood, with plaster facing.

Returning to the Champs de Mars, the pavilions of the Municipality of Paris stand by themselves, and I propose commencing with these.

THE PARIS MUNICIPAL PAVILIONS.

The two pavilions erected by the Municipality of Paris, and which are like one another as regards design and construction, stand in the open space in front of the great dome, and inclosed on three sides by the restaurant courts. They are longitudinal in plan, and consist of the iron trusses, &c., of the Jubilee Railway Exhibition held at Vincennes in 1887. M. Bouvard, the architect of the great dome, was called in to clothe these trusses, &c., with a suitable interior (No. 67, from *Engineering*), and considering that the buildings have only cost £6,000, one can say that he has done this with considerable success.

The buildings have been erected by various trade guilds of Paris. The interior is in wood, and parts are moulded. Each of the sides of the buildings have an entrance doorway surmounted with a low-pitched gable formed with wooden uprights and framing and bargeboards. The roofs are covered with tiles, and the whole is painted in a gay and effective manner; the gutter is supported by a wooden cornice with consoles.

The Exhibition itself consists of one building, which is devoted to the executive departments of the Ville de Paris, which is especially interesting to architects. The drainage system of Paris is explained by the aid of models and full-size sections of pipes, gullies, and ventilators, &c., and also by the drainage to a "Healthy House"



No 69 Pendantif du dôme central du pavillon de la République Argentine.

and an "Unhealthy House," which will be explained further on.

The other pavilion consists of objects and exhibits from primary schools, &c.

THE ARGENTINE REPUBLIC.

This pavilion is of the foreign countries distinctly the most original. The architect is M. A. Ballu, the son of that Ballu who, with Duperthes, erected the modern Hôtel de Ville at Paris.

The plan consists of a central dome, round which are grouped four smaller domes, all with a glass covering.

At the side opposite the entrance is the staircase, which leads to the first floor; this staircase is in wood, with iron treads and risers (see No. 68 from *Le Génie Civil*). There is a lantern light to the first floor on each side of the central dome. The dome is carried on iron lattice-work standards painted white, with a filling-in of blue plaster. The spandrels below the dome are filled in with "motifs" in bronze (No. 69 from *Le Génie Civil*).

The dome covering is in yellow glass supported iron purlins. The walls of the pavilion are 25 centimètres (10ft.) thick between the iron standards, which project into the building. The outer face of the first floor is recessed, and forms an interior balcony, which projects at different points by means of iron cantilevers.

Coming to the interior, we find that the central motif is composed of a large semicircular arch and two smaller openings on each side, over which are placed the smaller glass domes. On each side of these central features the façade is divided into three divisions by iron pilasters painted gold. Each of these divisions is again subdivided into three by light circular columns and caps in the Renaissance style and semi-circular arches; this is all painted gold, and the effect is very rich. These divisions are surrounded by two deep rows of blue tiles.

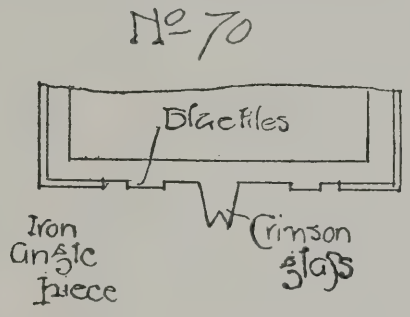
The three main arches are separated by piers formed of an iron framework and filled in with blue tiles and glass bull's-eyes in different colours; these are hollow, and are lit up at night with the electric light. Behind these hollow bull's-eyes is placed a thin layer of glass mosaic. This, M. Ballu explained, was to prevent the bull's-eyes working hollow.

In the central division of each of the wings there is a projecting balcony, elliptical on plan, supported by light iron cantilevers painted gold. There is also a square balcony to the angle towers on each elevation.

The cornice is supported by iron consoles running through the frieze, and between these consoles is a prism or "cabuchon" in green-coloured glass. Above this is a parapet, behind which is gutter (No. 68) painted a terracotta colour, and having electric lights along the top.

The ironwork generally is painted gold and green. The reveals to the arches to the main entrance are filled in with real mosaic, the dominant colours being blue, red, gold, and white.

M. Ballu, who explained the building in detail, told me that his idea in designing the building was to make use of all modern materials which could in any way be brought in. The pavilion has been built up in a framework of iron, and the materials used for filling in are terracotta, faience, glazed tiles, and coloured glass in bull's-eyes, which at night is lit up with the electric lights (No. 70). The building itself is put together in its larger parts by the aid of



bolts and screws, as it is the intention of the Argentine Government to have it re-erected at Buenos-Ayres.

The jury have awarded the architect, M. Ballu, the first prize for the foreign pavilions, and we think that for originality of treatment it well deserves the prize. There is no doubt, also, that this building, one of the first to be erected on the Champs de Mars, influenced to a somewhat large extent some others in close proximity, and M. Ballu, considering this to be the case, caused the president of the "Comité de la Protection Artistique des Œuvres d'Art" to take action in the matter.

The building itself cost £48,000, and, as an example of building in modern materials to the special needs for which it was designed, it is one of the most striking and original buildings in the Exhibition. I have to thank M. Ballu also for a complete collection of drawings of this building and for the great trouble and kindness he took in explaining the construction.

ARCHITECTURAL ADVERTISING IN ENGLAND.

As might be expected, the publication of the crude poetical effusion from the hands of an American advertising architect in last week's Building News has caused no little amusement to our readers, and some have forwarded us specimens of a similar style of thing, only of a more prosaic type, current in England among a certain class of practitioners working in the bypaths of the architectural profession throughout the country. The conspicuous absence of good taste in most of these productions of course goes without saying, and all the time we lack a proper system of architectural registration no limit can be insured to the extent in which touting may be carried on. Indeed, for the matter of that, everybody knows it is not altogether an unheard-of thing to meet with instances of rapacious overreaching in the practice of those even who reckon themselves among the *élite* of the profession, which would in no sense bear the light of day. What is more patent still, some who are most loud in their condemnation of advertising are themselves known to have been associated with very questionable pieces of sharp practice—on the quiet, perhaps—quite unworthy of gentlemen. Snobs of this kind abound in every calling, and the "Apostles of Art" are no exception to the rule. While all advertise more or less in one way or another, who shall cast the first stone? Anything calculated to discredit the repute of the profession should unhesitatingly be exposed, and those who are guilty of unworthy conduct must expect to be told of it, no matter in what grade of society they flourish. At present the professional press is the only available method in a general way of reaching men of this class; but when registration becomes law, a much more effective treatment will be secured for the malefactors. In the meantime, we scarcely consider it our function to single out the little vulgar puffers for execration, simply because their unblushing circulars are in bad taste and out of accord with generally-accepted rules of professional etiquette. The following is a specimen of the class of thing we have before us. It comes from Newport, Mon.; but we omit, for obvious reasons, the name of the author, who, on the fly-sheet, informs his readers that he can design any class of building, enumerating for their guidance the various classes—domestic, ecclesiastical, and commercial in all their detailed comprehensiveness. For these, he draws in "Deplicate." He is competent to take out quantities, estimate cost, measure up artificers' work, "plant" plans on parchment, undertake mathematical calculations, and arrange temporary or permanent loans. The circular is in the form of a letter, of which the following is an exact copy:—

To——,

Sir,—Doubtless you often require the services of an experienced Architect, Land and Building Surveyor. I have had a large experience in my business, and shall be pleased to prepare Designs, Working Drawings, Detail Drawings, Specifications, Bill of Quantities, &c., for any Architectural and Surveying Work you may have in hand or interested in, either in Public, Ecclesiastical, Private, Domestic, Villa, or any other Buildings, with or without the Superintendence of the Erection and Completion of the same at Moderate Charges. As Competition is very great in our day, I submit for my Clients' approval Sketch Designs (Free of Charge) of any class of Buildings they may intend to erect, or are interested in, upon receivin (*sic*) particulars of their requirements. I shall be pleased to Survey, Level, and Lay Out any Land for Building Estates or other Purposes. I have had a large experience in Designing, Planning, and carrying out Buildings in London, Cardiff, and other towns, and shall be pleased to submit to you Specimen Work and Testimonials from Clients for whom I have carried out Buildings, &c. of ability in my Business. Any work entrusted to me will be thoroughly and carefully executed in all details, and carried out in a proper manner. My Experience is large and varied, and I am well versed in all matters and requirements of Local Boards, Rural and other Sanitary Authorities, and in regard to the most improved systems of Drainage and Ventilation and all necessary requirements in the erection of Buildings.

I beg to call your attention to the fact that I take great care in preparing Bills of Quantities for Works that they contain every item to complete the Buildings for which they are prepared fit for habitation, and with the Measurement of the Materials I fully specify and describe where and for what part of the Buildings they are required, so that a Novice to the Building Trade could easily follow each item out. If I am favoured with your patronage I shall be able to prove practically what I now state in this Letter. Trusting to receive your patronage, I remain, Yours respectfully, ******, Architect and Surveyor.

If you have anything in my way to be done and you will please drop me a Post Card, I will attend to it and see you without delay.

Designs for any buildings sent free of charge.

The work of preserving the Abbey Church of Crowland, Lincolnshire, has been in progress for some time, and six of the ten sections requiring attention have now been restored. The rector of the parish has raised £1,400 out of the £3,000 required to preserve what remains of this venerable relic of antiquity.

The bell striking figures of Gog and Magog in Cheapside are to come down, as the front, so long associated with that modest horologist Sir John Bennett, is about to be rebuilt by the Limited Company who took over the business. These clockwork giants are, however, to be reinstated, as their advertising worth has been proved by experience and has frequently caused great inconvenience to pedestrians in that crowded thoroughfare. When first put up, some years ago, the proprietor was summoned for causing thereby an obstruction to the traffic. He suggested, if we remember rightly, that being the best-looking man in the street the public naturally stopped to obtain a glimpse of him. Mr. Burnel Burnel is the architect of the new façade.

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CONTEMPORARY BRITISH ARCHITECTS.—THE WHITWORTH MEMORIAL HOSPITAL.—BAKEWELL TOWN HALL.—ALL SOULS' CHURCH, HARLESDEN, N.W.—CRANBORNE MANOR HOUSE, DORSET.

Our Illustrations.

CONTEMPORARY BRITISH ARCHITECTS.

(See description on p. 416.)

WHITWORTH HOSPITAL, DARLEY DALE.

This hospital has been erected by the trustees of the late Sir Joseph Whitworth, Bart., of Stancliffe, on a piece of ground on the high road between Darley Dale and Matlock. In the main building provision is made for eight beds (four for men, and four for women), medical officer's, matron's, and nurses' rooms, parlour for convalescents, &c. In the detached building provision is made for two men patients and two women patients, nurses' room, and patients' sittting-room. A mortuary is built at the back of the detached building, screened from all the windows of the buildings. The materials used are local stone of rich varied tints for the lower portions, with red tile hangings for the upper stories, and red tiles for the roof. The buildings are fitted up with all modern conveniences, and great attention has been paid to the sanitary arrangements. The whole of the work has been carried out by Messrs. Southern and Sons, contractors, of Manchester, from the designs and under the superintendence of Messrs. J. W. and R. F. Beaumont, of 10, St. James's-square, Manchester, and 73, Queen Victoria-street, London. Mr. Patterson has acted as clerk of works.

NEW TOWN HALL AT BAKEWELL.

This building, of which Mr. George E. Statham, Nottingham and Matlock, is the architect, was opened yesterday by the Duke of Rutland. It has been designed to harmonise with the quaint Gothic work, of which so many good specimens may be found in Derbyshire, and of which Haddon Hall is so fine an example. The structure is of local freestone. The plan of the buildings is somewhat peculiar, and has been made to suit the special requirements of the town. A public hall, having stage fitted for theatrical performances, and a justice room fitted for Petty Sessions and County Court, each with necessary retiring rooms and offices, form the chief accommodation. The staircases are of York stone; landings and approaches to public hall are all of fireproof concrete vaulting. The entrance halls, landings, lavatories, &c., have marble mosaic pavements by De Grelle, Houdret and Co., of London; floors of large rooms are of pitch-pine. The ornamental iron balustrade, gas-fittings, &c., have been executed by Mr. G. Wragge, of Salford, and the stained glass by Messrs. Shrigley and Hunt, of Lancaster and London. A good effect is obtained in the public rooms by the deeply-recessed and arched windows, each having a seat fitted in. The building is heated throughout by hot-water apparatus. A block of offices is being built at the corner of the site by Messrs. F. and H. Taylor, solicitors, to complete the town hall buildings. The contractors for the stonemasons', &c., branch of the town hall are Messrs. J. Walker and Son, of Wirksworth, and of the offices, Mr. T. Allsop, of Bakewell, and Messrs. Norman and Groom, of Bakewell, are contractors for joiners' work and plumbing throughout. The total cost is about £6,000. The whole works have been carried out to the designs and under the supervision of the architect.

CHURCH OF ALL SOULS, HARLESDEN, MIDDLESEX.

This church, of which we give this week an interior view looking west, was partly built and consecrated some twelve years ago, and has now been completed, with the exception of the tower and certain internal fittings and decorations. The nave and aisles form an approach to a more extensive portion of the interior, as they would do in a cruciform church; but this portion, which has been called the "dome," is entirely unobstructed by such piers as are usually found in a transeptal building. It somewhat resembles the dome of the Church of S. Gereon at Cologne. The Cologne churches have also suggested the grouping of the turrets flanking the apse, with its arcade just under the eaves. This arcade is glazed at the back, and gives light to the upper surface of the brick and stone vaulting. An organ-chamber has been added, with a lofty roof rising above the window which occupied this gable of the octagon. The removal of this window, and of those at the clerestory level, has produced an organ-chamber which Mr. Willis declares to be the finest in London, and it is to be hoped that funds may be forthcoming to provide a permanent organ to be built in it. Since the preparation of the original plan in 1877, it has been found expedient to increase the number of bays in the nave from three to five, in order to provide for the great increase in the local population. Beyond this is a western porch, abutting close on to the road, and the lintel and imposts are left in block for sculpture. This sculpture should represent "All Souls," a somewhat difficult subject, the treatment of which is still under consideration. Internally there is a large panel at the west end of the nave intended for permanent colour decoration. Around the dome, except where pierced by the arches into the nave and apse, there is a continuous band of plain walling, about 6ft. high, which is intended to contain a representation of the Te Deum. The windows are being filled with stained glass as opportunity arises. The architect is Mr. Edward J. Tarver, F.S.A.

CRANBORNE MANOR HOUSE, DORSET: R.I.B.A EXTRA MEDAL DRAWINGS.

This double-page plate of details is from the same prize set of drawings of this celebrated historic house, by Mr. J. E. Mowlem, as the sheets which we printed in our issue for May 23rd last, when we gave the general plans and elevations of the building, with an account of its history. We likewise at the same time published some elevations and plans of the entrances, lodges, and a page of details of the wooden staircase in the manor-house. To-day the enlarged parts represented readily explain themselves when studied in connection with the general drawings just referred to. The property belongs to Lord Salisbury, and the estates give the title of Viscount Cranborne to the Prime Minister's eldest son. Canon Cazenove is the present occupier. Inigo Jones added a wing to the house.

Mr. William Stevenson, who has been residing in Scarborough for the past seven years, has returned to Hull and is opening offices on the Queen's Dock side. We understand he has retained the services of Mr. George Bousfield, salesman during the past five years with Messrs. Joseph Chapman and Co., timber merchants, Grimsby, and Mr. George Bell, clerk during the last eight years with Messrs. Stratford and Mullett, wholesale cabinet-makers and sawmill proprietors, Hull. Mr. Stevenson's speciality is the hardwood branch of the trade.

The architects of the proposed schools at Watford are Messrs. Ayres and Ardron jointly, and not C. P. Ayres only, as published last week in the list of tenders.

A new town hall has been erected at Northampton, and special attention has been paid to the ventilation; the extraction of the vitiated air being effected by Messrs. Robert Boyle and Son's latest improved self-acting air-pump ventilator.

During the year ended on June 1st, 2,049 houses have been built within the city boundaries of Glasgow, making a total number of 118,272.

Engineering Notes.

Highland Railway Extension.—The directors of the Highland Railway have decided to proceed forthwith with the construction of over 40 miles of new railways. These will include (1) the construction of the second portion of the new Aviemore line, extending from Carrbridge to the River Findhorn, a distance of about eight miles, thus carrying the line over the first half of the route to Inverness; and (2) to proceed with the construction of the Black Isle Railway from Muir of Ord to Fortrose, a distance of 30½ miles; and (3) to proceed with the extension of the Burghead branch to Hopeman, a distance of 2¼ miles. The directors have resolved to invite tenders for the works without delay, and on their acceptance the construction of the various lines will at once be proceeded with. The first section of the Aviemore line, that from Aviemore to Carrbridge, is making good progress, and will be opened in May of next year. This line, when completed, will reduce the distance by rail between Inverness and the south by 24 miles, saving the long detour eastwards to Forres.

CHIPS.

The town council of Stockton-on-Tees resolved on Tuesday afternoon to purchase, at £300 per acre, some gardens containing between three and four acres, to be added to the 36 acres which Major Ropner has, at a cost to himself of £9,000, presented to the town for the purposes of a park.

A commencement will be at once made in carrying out the improved approach to the cathedral of Gloucester, at a cost of about £9,000, by widening College-street to the extent of 32ft., directors having been elected by the company which has been formed, and all the old houses to be removed having been purchased.

The memorial to Mr. John Pearson, who died in 1887, and who held the offices of chairman of the Lancashire and Yorkshire Railway, mayor of Liverpool (1871-2), and high sheriff of Lancashire (1875-6), was unveiled on Wednesday in front of Exchange Station, Liverpool. The memorial, which is by Mr. F. J. Williamson, of Esher, takes the form of a square bronze panel, 4ft. 9in. by 3ft. 9in., inclosing a concave oval, in which is placed an heroic-sized full-face portrait bust of the deceased in alto-relief. At the four corners of the panel are the arms, in bas-relief, of Yorkshire, Lancashire, Manchester, and Liverpool, entwined with the rose of Lancashire.

Three handsome bronze panels, bearing the name and date of foundation, have lately been placed in the Clare-street front of the new building in Bristol for the Provident Life Office. The addition of these panels has a striking effect, and are the completing touch to the handsome pile of offices erected for the company from the designs of their architect, Mr. E. Henry Edwards, of 5, Clare-street, Bristol.

In the list of receiving orders in Friday's *Gazette*, the name appears of George Wall (trading as Wall Brothers), of Carlton-road, Kentish Town, builder and contractor; and among the adjudications in bankruptcy is that of Edwin Finch Spragg, Saltoun-road, Brixton, surveyor.

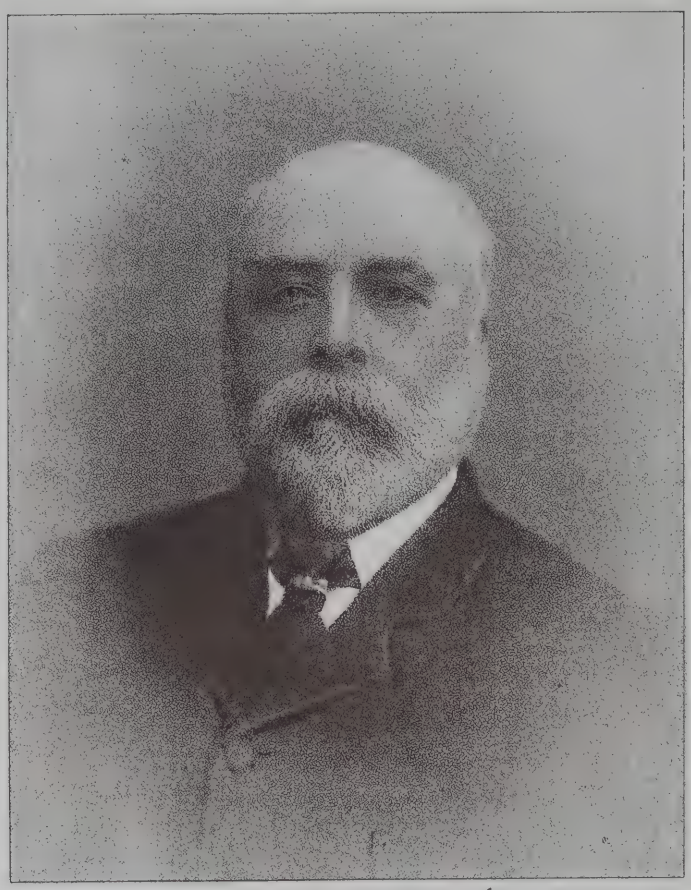
On Thursday week a new dry dock constructed at Newport, Mon., was opened by the mayoress. The dock has been constructed by Mr. Mackay, contractor, Newport, from the plans of Messrs. Jacob and Pickwell, Cardiff, its length being 350ft., width 60ft., and draught 32ft.

The restoration of the south and west façades of the Ducal Palace at Venice, which has been for many years in progress, has now been completed, and the scaffolding has been removed during this week.

An altar tomb of alabaster, executed by Mr. A. Bruce Joy, in memory of Dr. Berkeley, Bishop of Cloyne, was unveiled in Cloyne Cathedral on Tuesday, when an address was delivered by Dr. Gregg, Bishop of Cork, Cloyne, and Ross.

Mr. Codrington, C.E., held an inquiry at Bangor, on Friday, on behalf of the Local Government Board, touching an application by the town council for a loan of £650 towards carrying out public improvements in the borough. Evidence was given by Mr. Gill, the city surveyor.

The Coventry School Board decided on Friday to accept the tender of Mr. T. Wingrove, of Northampton, for the erection of the new set of schools in Wheatley-street, according to plans prepared by Messrs. G. and J. Steane, for the sum of £15,596, the cost of site and other charges being estimated to bring up the total cost to £20,000. Mr. A. Davis, late of Cheltenham, was appointed clerk of the works, at a salary of £4 a week.



J. A. Chatwin

J·A·CHATWIN·F.S.A. (SCOT.)
ARCHITECT·OF·LLOYDS·BANK·LOMBARD·ST·LONDON

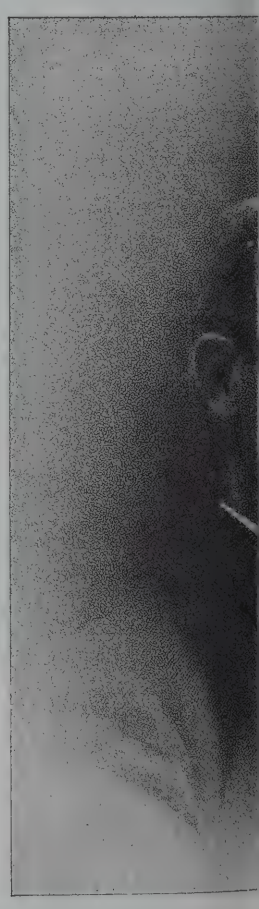


THE·LATE·S



W. H. Littlewood

W·H·LITTLEWOOD·F.R.I.B.A. (MANGNALL & LITTLEWOODS)
ARCHITECT·OF·PUBLIC·MARKETS·FOR·THE·CORPORATION·OF·MANCHESTER·

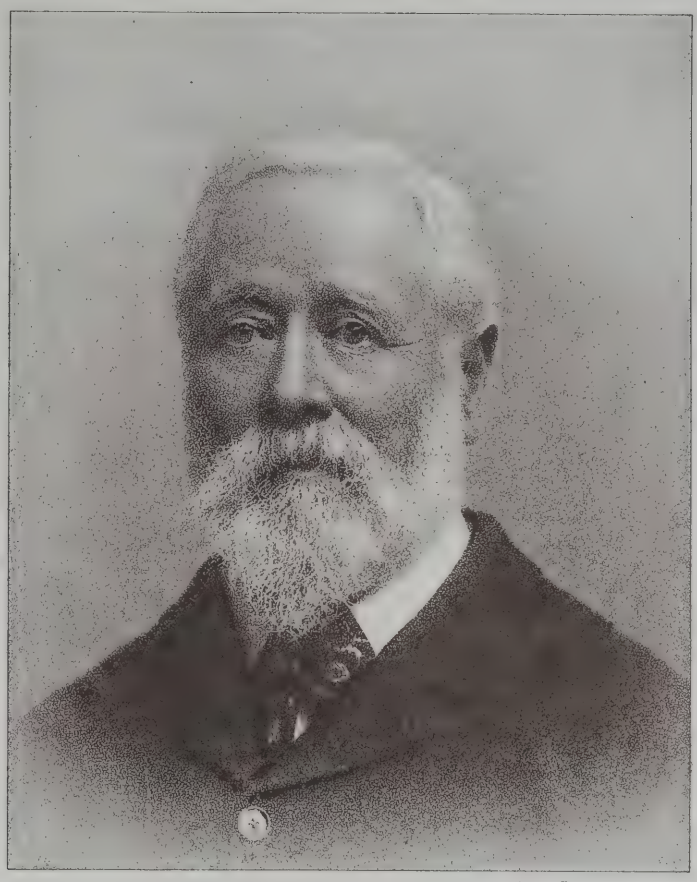


G·WA
ARCHITECT·TO



win Chadwick.

CHADWICK·K·C·B·



S. J. Nicholl

S·J·NICHOLL·A·R·I·B·A·
ARCHITECT·OF·S·FRANCIS' HOME·FOR·BOYS·SHEFFORD·BEDS·



Wrightington Bronk

ROWNE·
UBLIC·LIBRARY



John Littlewood

JOHN·LITTLEWOOD·F·R·I·B·A· (MANGNALL & LITTLEWOODS)
ARCHITECT·OF·PUBLIC·MARKETS·FOR·THE·CORPORATION·OF·MANCHESTER.

"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.

Fig. 1. Façade principale

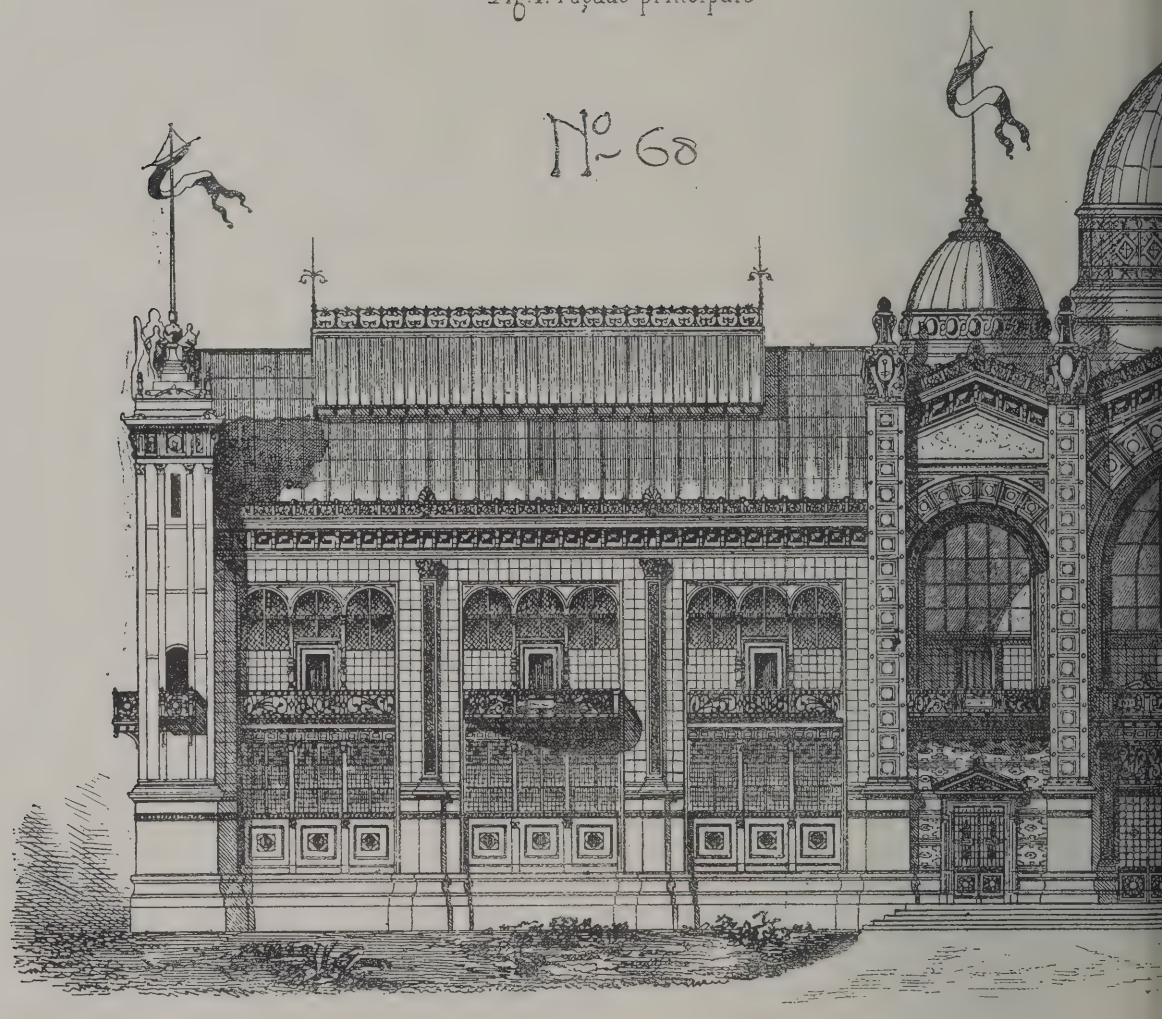
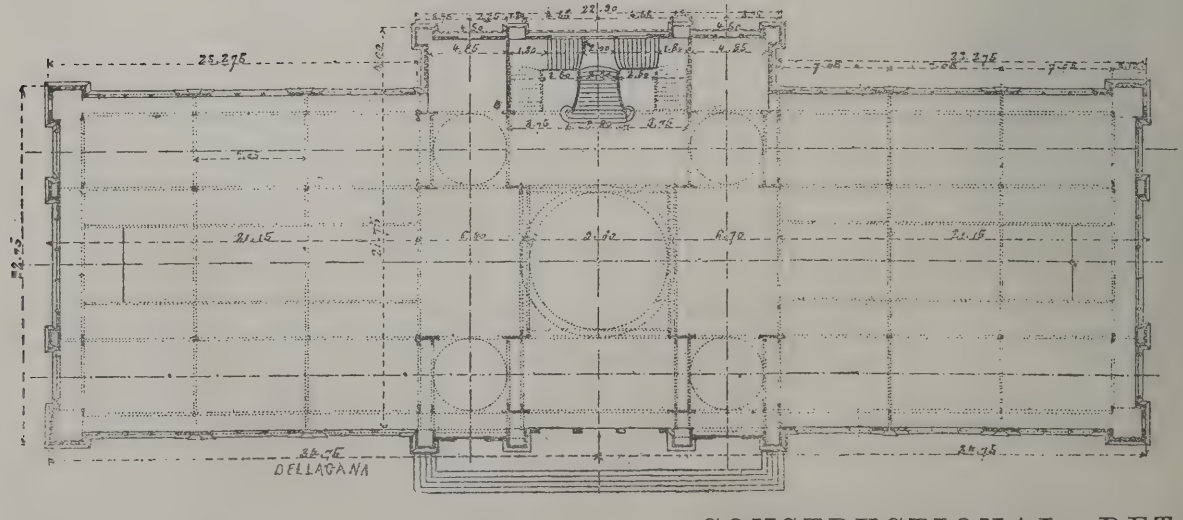


Fig. 2. Plan du Rez-de-Chaussée.



PAVILLON DE LA REPUBLIQUE ARGENTINE

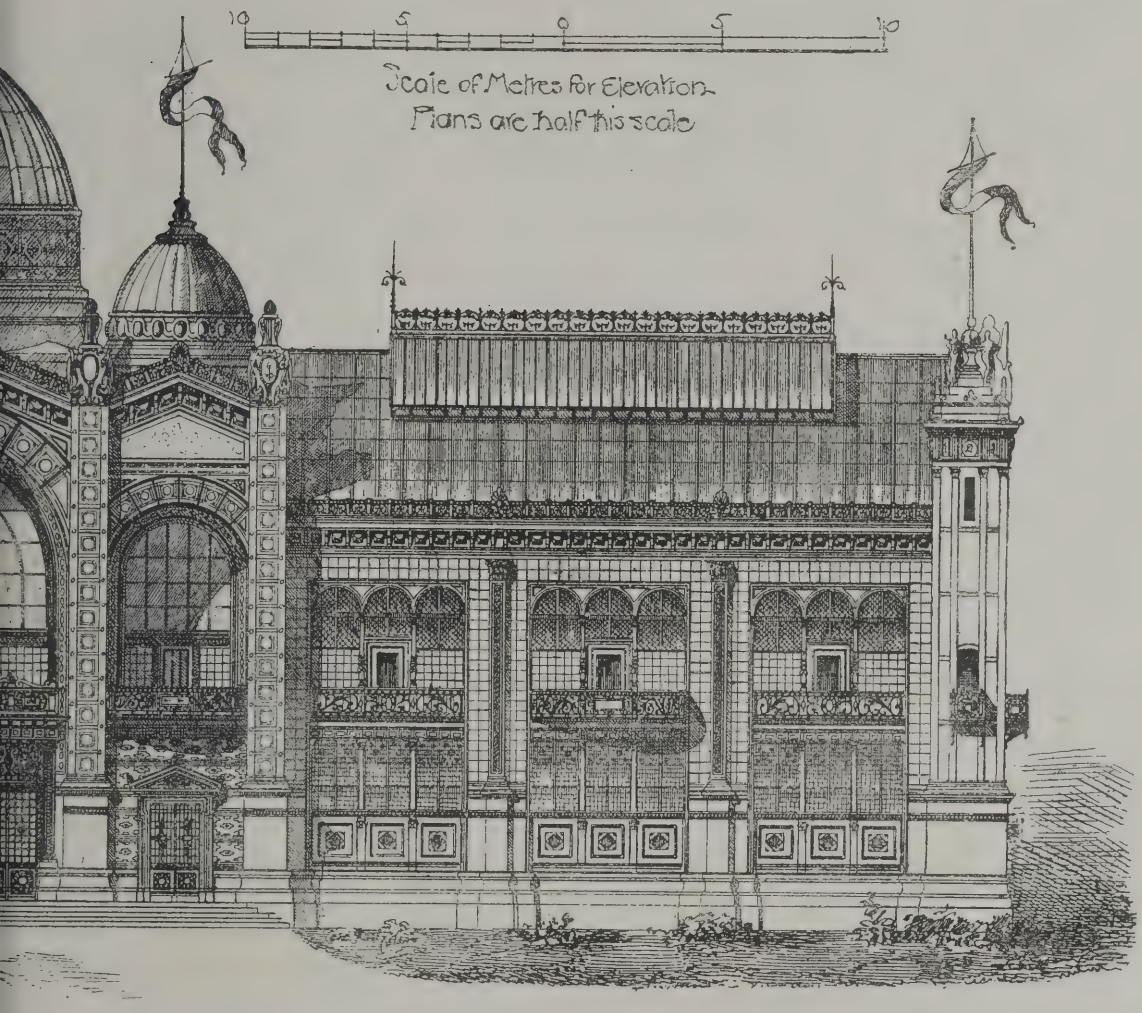
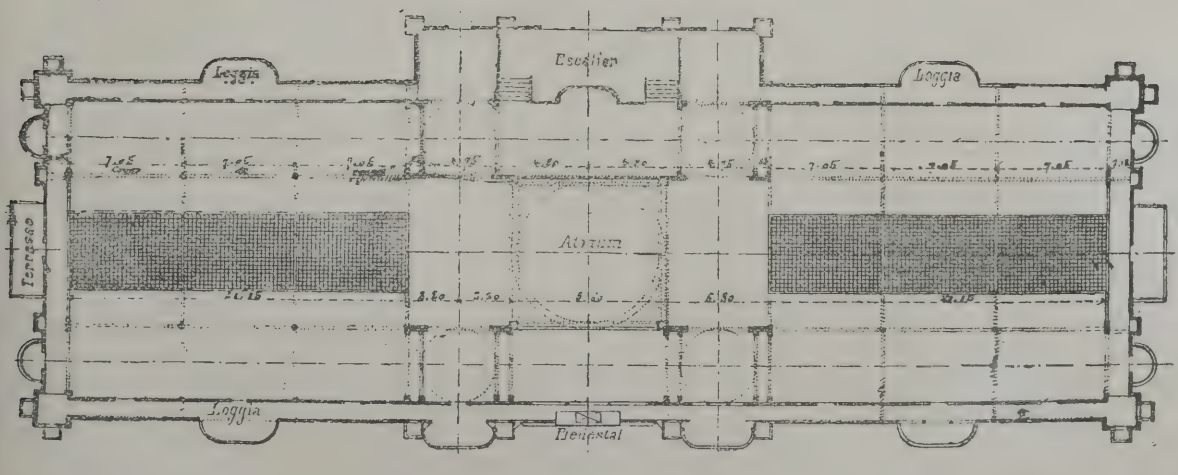


Fig. 3.—Plan du 1er Etage



THE PARIS EXHIBITION.

WAYSIDE NOTES.

THE whole architectural world may con- gratulate itself that the Alhambra has not en burned to the ground. Much as we may ve to regret, the damage done is small when mpared with what might very easily have curred had the fire been less under control. A flection of this kind is perhaps no great con- lation in view of the fact that what has been stroyed is neither to be replaced for love or oney; but it is something to compensate for e loss sustained. Had the whole building been stroyed, and it had suddenly been found that l that posterity would have to remind it of the ory of the Saracenic masterpiece would be the odel at the Crystal Palace, and "Jones," and Murray," the art world might have reasonably it on some show of mourning. Every artist d architect cherishes some hope of some day ssibly setting foot among the ruined wonders the Eternal City and on the Athenian Acro- lis; no less have they a longing to look upon e "Red Palace" on the heights of Granada, d linger in its cool courts and many-coloured lls. Compared with the numbers journeying the East, and bent on exploring sites llowed by classical memories, few penetrate to the heart of Spain and stand before the faded ories of the old Moorish potentates. Travelling the Peninsula is not attractive, and of bad pute; in consequence the Alhambra is visited ly by persons passing through Granada on siness, or such as from a desire to see the orld-famed building—now despoiled of one nole court and a portion of another—are to be terred by no lack of personal ease and com- rt. As a result, I should imagine, the real auty of the Moorish Palace is as incom- ehensible to those of us who have never trodden panish soil, as is the white marble loveliness of e Taj Mahal to those who have never stood in e blaze of an Indian sun. Fortunate, then, r the present and future generations is it that e hope of seeing the Alhambra may remain. ne Court of the Myrtles may have disappeared r ever, and with it some portion of the rrayanes Court; but the Alhambra, as a world's onder, remains, in spite of the recklessness of harles V., the ill-advised restorations and vulgar terations of Isabella II. and King Philip V., e wanton desecration of General Sebastiani, and e recent disastrous conflagration.

The "Iron Gates" have been attacked at st, and, with perseverance, the works in- gurated by M. Baross, the Hungarian Minister Commerce, will be the means of facilitating eatly the navigation of the Danube. Long ve these masses of rock been an obstruction to e river, and not only to the waters themselves, using dangerous rapids, but to commerce on eir surface. Vessels of no great tonnage will able at some future date to pass up and down e river; but it is expected that in years to me the new canals will be made wider and eper, after the system followed in the con- ruction of the Suez waterway. It is curious to flect that 17 centuries ago Trajan seems to ve had an almost identical plan for the removal the Iron Gates to that to be followed now, and r which the Hungarian Parliament passed a ll two years ago. The old Roman Emperor, leed, is stated to have commenced actual work, ices of which, it is said, are still to be seen, r the construction of a large navigable canal the right bank of the Danube, so as to oid the Iron Gates. The end in view seems to ve been the removal of rocks, the cutting canals, and the formation of dams where the cks were too numerous. The present scheme actically embraces the proposals of Trajan, and ll be worked out from details of operation anned by Willandt, the Hungarian engineer. the several canals required to be formed, one the Servian bank of the river will have a ngth of over two kilomètres. The works are ubtless to be very heavy at times, and it would interesting to know the *modus operandi* pro- sed by Trajan and his engineers, without un- nited kilogrammes of dynamite or, so far as know, any other blasting agent. Possibly ey would, by slow and laborious degress, have verted the waters, now here, now there, and mmenced a process of rock-removing akin to grubbing of tree stumps. Vastly more to the dit of the old Romans would have been the rk if carried out than to the engineers of to- y with their dynamite and other scientific aids known to the ancients; and I suppose it is these scientific short cuts to great ends that deprive modern engineering of poetry and wonder, and their absence that induces us to look at works of antiquity with a feeling akin to awe.

"Active measures" are a good deal talked about, but less frequently taken. When they are, it is always pleasing and grateful, by contrast with the British stick-in-the-mudism. The people interested in the condition of the Wandle, in Surrey, are not going to stick in the mud and refuse that is choking their pretty river, but are setting themselves in earnest to restore to its pristine liquid condition the gravel-bedded, chalk-bottomed, crystal stream of which Mr. Ruskin wrote fondly in "A Crown of Wild Olives," wherein, too, that great writer has pointed out the quiet beauty of the country through which the Wandle passes, and the charm of Carshalton, with its quaint old church and village street, and of Beddington and Mitcham lower down its course. One wishes the energetic movers in this matter every success in forming and maintaining the association proposed for the preservation and conservation of the river, and for maintaining its old reputation for the abundance and excellence of its trout. That there will be no difficulty in this is apparent from the list of names of persons interesting themselves in the proposed company or association; and at the meeting at Carshalton Park on Tuesday afternoon, it was stated that a good sum of money had been promised in shares. This effort to restore a beautiful river to its former good condition is worth the notice of riparian owners and others interested in many small English streams and rivers, which, through various causes, have become polluted, choked, or altered in character. As a rule, such degenerations and gradual alterations for the worse are greatly neglected, it being no one's business in particular to move in the matter. Mills and drains pollute, and accumulations of mud, or worse, take place, and the character of the stream is entirely altered. Many a beautiful river and stream in a beautiful countryside that once was, and should always be, an attraction of the place, becomes foul, and often pestilential, the last surviving fish having long floated belly-uppermost. Matters like these should be taken in time; the "active measures" should be inaugurated and followed up at an early stage. The Wandle, I believe, has not got into such a very deplorable condition, but it would doubtless sooon do so, had not many gentlemen banded themselves together thus promptly.

The London County Council don't intend that their assistant engineer, when appointed, shall have more money than they can possibly avoid giving to a person qualified to fulfil the duties of the post. The advertisement of the vacancy does not give one any clue as to the position of the assistant in the engineering staff; but from the display and show in it one would conclude that he is to be well up, if not at the head of the assistant staff. In which case £200 per annum is very small for an engineer having the knowledge required by the Council, and doesn't look any larger for the munificent rise of "£15 a year to £245, with prospective further increase (dependent on merit) to a maximum of £300 a year." It is candid to state that the further rise is "prospective"; and the young engineer between the ages of 27 and 35 years, with thorough experience, great accomplishment as a draughtsman, knowledge of sewage and other pumping machinery, not to mention marine engineering, who obtains this lucrative appointment with a "prospective" rise of £45, will know he need not be over-sanguine as to getting it. Men with wives and families will note the special stipulations in the advertisement that the engineering assistant "will not on retirement be entitled to any superannuation or pension," and therefore arrange for their own superannuation fund, should one with a quiver full get the important municipal appointment.

Mr. Gladstone gave a very interesting address to the asembled members of Saltney Literary Institute, subsequent to his visit to Messrs. Henry Wood and Co.'s chain and anchor works at Saltney, touching the dignity of labour, and with especial reference to manual labour. Any protest against the deplorable delusion of the lower classes in making their sons "labourers with the pen," as Mr. Gladstone happily put it, is welcome, and especially one from so powerful a thinker. Where men would be leading happy, manly lives on works as skilled artisans, thousands, we know, and tens of thousands draw out a miserable existence as "labourers with the pen" in unhealthy offices, and for less remuneration than they could obtain as ordinary skilled artisans and mechanics. Whatever the blessings of compulsory municipal education, it has certainly created an evil in this way, though one that may some day right itself. Without of necessity being a disciple of Count Tolstoi, one may aver that the ordinary lower-class father will be best insuring the happiness of his sons and the good of the nation by bringing them up as artisans or mechanics, or to some honest manufacture or handicraft. Much as has been written as to the dignity of labour by great writers, the popular delusion as to the desirability of a life in a City office as against one at the lathe or bench, &c., still holds sway. But in days when everyone can read, write, and "'rithmetic,' it is not venturing too much to predict that at no distant date a considerable change will be evidenced, and the mere, mechanical "labourer with the pen" be regarded as the lowest possible class of workmen in the body social.

GOTH.

CHIPS.

The wife of Mr. Roumieu Gough, F.R.I.B.A., died on Friday at her residence, Shaftesbury-road, Ravenscourt-park, aged 46 years.

The foundation stone of the "Eiffel" Tower and bridge at Douglas, Isle of Man, will be laid by the Earl of Lathom to-morrow (Saturday). The works are being carried out from plans by Mr. Floyd, C.E.

The School Board for Seacombe have adopted plans by Mr. T. Mellard Reade, of Liverpool, for new schools, to which baths and offices for the board are to be attached.

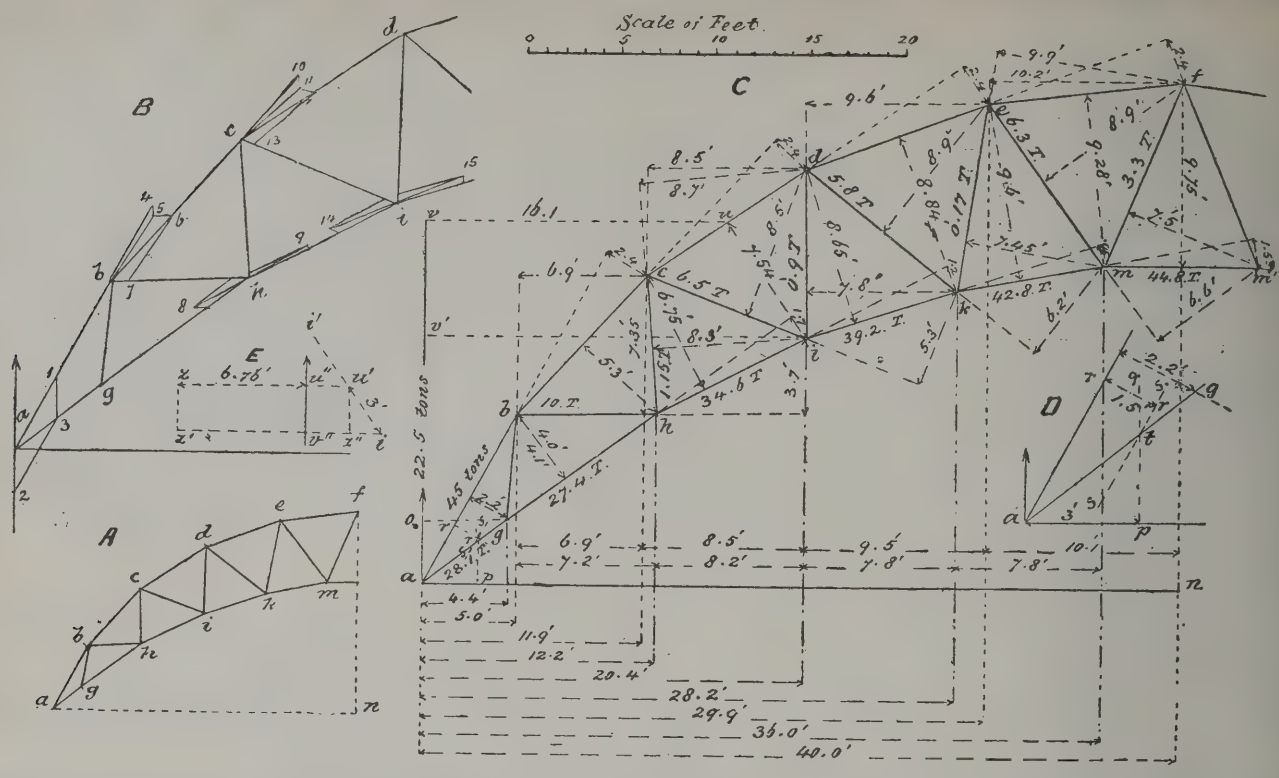
The erection of new stalls in Peterborough Cathedral has been commenced. The foundations have been put in, and part of the oak work has been placed. The cathedral is to be re-opened on the 14th of October. The restoration, which has been in progress for five years, has been carried out under the direction of Mr. J. L. Pearson, R.A., the contractor being Mr. John Thompson, of Peterborough.

A memorial cross has been placed over the grave of Dean Bramston at Winchester. It is hexagonal on plan, and consists of two steps, also hexagonal, from which rises the base, carved on its sides with six shields, above which is the clustered shaft of the cross, 12ft. high, and finished with an open tabernacle in which are six statuettes. The cross was designed by Mr. Kitchin, son of the present dean, and executed by Mr. Whitley, the cathedral carver.

A new Liberal club is about to be built at Lincoln, at a cost of about £2,200. Messrs. Sington and Brameld, of Manchester, are the architects, and Messrs. Lansdown and Son are the contractors.

On Saturday the foundation-stone of the new Albion Congregational Church at Ashton-under-Lyne was laid by Mr. Abel Buckley. Contracts have been entered into for the completion of the structure at a cost of £20,000, and the building is being erected by Mr. Allen Holmes, of Ashton, from designs by Mr. John Brooke, A.R.I.B.A., of Manchester. The church, which will have the highest spire in the town, is to be built in the Stamford-terrace, Lees-square, and will accommodate 1,000 persons. Mr. Buckley has promised to make a gift of the tower and spire to the church, which will cost £4,000.

A special meeting of the Queenbury Local Board was held on Tuesday week to consider a claim by Messrs. E. and E. Balmforth, contractors for the reservoir, for extras, the Waterworks Committee being unanimous in their opinion that the balance certified by the engineer was in favour of the contractors. Mr. J. Flew, F.I.A., of Bradford, on behalf of Messrs. Balmforth, explained the items in the claim, the chief of these being for cement concrete used in lieu of clay puddle. The contractors, it was admitted, did not obtain a written order from the engineer, Mr. Drake, before making this substitution, considering that a signed drawing prepared by the engineer would be sufficient evidence for recovering payment. Replying to a question, Messrs. Balmforth said that the amount of commission they were allowing Mr. Drake (the Board's engineer) was 2 per cent., not 5 per cent. as had been stated. A letter was read from Mr. Drake, the Board's engineer, stating that he refused to attend the meeting as requested, after having examined the account with the schedule of prices. It was resolved that the Board could not see their way clear to deviate from the engineer's certificate, the Chairman suggesting that it would be best to let the matter go to litigation.



THE CRESCENT FORM OF TIED ARCH.

THIS structural combination is generally termed a "crescent-girder," but is more properly a tied arch. With the exception of the top member, all the bars are ties, and there is no web in the sense of a weight-carrying element, whereas a girder is usually taken to be a combination of a web carrying the load, with flanges which keep it extended, and for that reason have, by some authors, been called booms.

It has been customary to analyse the strains on this class of rib by the principle of the parallelogram of forces; but there are some reasons of a practical character which show that that method is not so convenient in the present case as treatment by the principle of equal moments of force, and these reasons we shall now proceed to set forth.

In the accompanying illustration, at A is shown a key diagram of half a crescent-rib, exhibiting the arrangement of the bars. It will be observed that the top member is not uniformly curved, but made up of straight lengths, *ab*, *bc*, *cd*, *de*, and *ef*, and this is so made because the load is not evenly distributed along the length, but aggregated at the points *b*, *c*, *d*, *e*, *f*, and the directions of the strains are therefore determinate, and do not change under variations of load. As we intend to show a method of designing these structures by means of an example, definite sizes have been taken. The span is assumed as 80ft. (*a n* = 40ft.), and the total rise *n f* is 27ft., the depth at the centre is for the present taken as about 10ft.; but this will be more precisely defined as we proceed. The points *a* and *f* being thus fixed, a circular arc—of which the radius is 43·13ft.—is described between them, its centre, of course, being in the straight line *f n* produced. The intermediate points between *a* and *f* are found by dividing the arc into equal parts—in this case, five—and from point to point thus determined are drawn the centre lines of the bars forming the arch. The assumed maximum load is 5 tons at each point *b*, *c*, *d*, *e*, *f*, thus making the total load on the entire rib 45 tons, which will give a load on each point of support equal to 22·5 tons, and that amount will, therefore, be the reaction at each support. Although this work is an arch, it puts no thrust upon its supports, the thrust being taken up by the ties, and therefore its ends must be carried in shoes, of which one is free to move on its supports in order to allow for the expansion and contraction arising from changes of temperature. This is a very important point to watch during the erection of a rib of this class, for we have known of several cases in which the erectors have fastened the ends firmly, under the impression that the work was a free arch. This, in one case, caused twisting of the ribs, which, however, disappeared when the ends were released; in the other cases this blunder was watched for by the engineer, and corrected as soon as it occurred. This is one instance out of many how obstinate workmen can be in respect to matters of which they have no correct knowledge.

If the strains are to be determined by the parallelogram of forces, the disposal of all the bars must be made, and it is assumed that the form shown at A is adopted—at all events for a first trial. To show the application of this method and illustrate the disadvantages attending it, a part of the rib is drawn to a larger scale at B. Upon the vertical line touching the extremity *a* of the rib, mark off from the point *a* to any convenient scale the distance *a* 2 equal to the reaction, 22·5 tons, and complete the parallelogram *a*, 1, 3, 2, then *a* 1 and *a* 3 respectively represent (to the same scale as *a* 2) the stresses on *a b* and *a g*, the former being compression and the latter tension. *a g* is so nearly in the same straight line with *g h* that no resolution of strains can be made at *g*—but the bar *b g* must be retained to prevent the long bar *a h* from "sagging" with its own weight—we therefore pass on to the point *b*, and there resolve the strains on bars *b c* and *b h*. Produce *a b* to 4, making *b* 4 equal to *a* 1. At *b* there is a vertical load of five tons, therefore draw vertically the line 4, 5, equal to five tons on the scale, and join *b* 5; *b* 5 will be the resultant of the vertical load and the thrust on *a b*; complete the parallelogram *b*, 5, 6, 7, then *b* 6 and *b* 7 will respectively represent the strains upon the bars *b c* and *b h*. At the point *h* is formed another parallelogram from the strains on *b h* and *a h*, of which the resultant is 8, *h*; this being produced through the point *h*, and *h g* being made equal to *h* 8, the strains are found upon *h c* and *h i*. At *c* the direction of the bar *h c* happens to be vertical, so the strain upon it is added to the load of five tons at *c*. *b c* is produced to 10, making *c* 10 equal to *b* 6; 10, 11, is drawn vertically equal to five tons plus the strain on *h c*, and the resultant *c*, 11, is resolved upon the bars *c d* and *c i*; *c* 12 and *c* 13 representing the strains upon them respectively. At the point *i* the strains are dealt with in the same manner as at *h*, by means of the parallelograms *i* 14 and *i* 15, and so on until the centre of the rib is reached. For our present purpose, however, we have gone far enough, that being to point out the disadvantages of the method.

It will be seen that the angles, 4, *b*, 5; 10, *c*, 11; and those also at *h* and *i* are very small, and no matter how large the scale to which the diagram is drawn, the angles remain the same; this is a great obstacle to obtaining accurate results, as a very slight *actual* error in drawing the angle makes a very considerable *proportional* error in the result, and the error made in one parallelogram is passed on through the following ones to the end. Another inconvenience is that the whole arrangement of the bars must be made to begin with, we cannot build up, as it were, as we proceed, which it will be shown we can very conveniently do if the method of moments is adopted for the analysis of the strains.

At C is shown enlarged the half rib lettered the same as the key diagram at A, and with all the results as determined by the principle of moments marked on; the measurements have been made, where they required scaling, from a much larger diagram from which that shown has been reduced.

Now firstly, in regard to size of angles of lines in the diagram; in the top member there is none upon which a measurement depends smaller than that contained by *b c* produced, and *c d* (which gives the measurement 2·4), and this is equal to 4 *b* 6 in diagram B, and therefore more than double the angle 4 *b* 5. In the bottom member, diagram C, the angle contained between *g h* produced and *h i* is obviously very much greater than the angle 9 *h i* in diagram B; so it is evident that the risk of error from this source is very materially reduced, if not altogether removed. Secondly, it will be seen as we progress that the strain on each bar of the top and bottom members is calculated quite independently of the strain on any other bar, so that an error in the strain upon one cannot affect the calculation of that upon another, and it is only in the diagonal ties, in which the strains are light, that they follow consecutively.

It should not be difficult to perceive that considerable practical convenience and expedition in making a final design must accrue from the adoption of a mode of calculation which permits of the arrangement of the bars being made *pari passu* with the computations, so that the strains, so far as intensity is concerned, may be adjusted to give the most satisfactory disposition of material.

As has been remarked in an earlier part of this article, the top member of the rib is the only part that is in compression, and therefore the only part that requires to be of a built up section suitable to withstand that class of strain. Such a section is very inconvenient to vary, in order to adapt it to varying strains, hence it will often happen, as a matter of practical necessity, that where there is a varying thrust, the section will be made throughout strong enough to resist the strain at the point of maximum thrust, thus causing a waste of material; the same inconvenience does not arise in the treatment of flat or round tie bars, hence it is obviously desirable to keep the strain upon the top member the same throughout its length.

We now start, then, having only the points *a*, *b*, *c*, *d*, *e*, *f*, fixed; and assuming the depth at

the centre to be about 10ft., we roughly find the strain at the centre from the expression $S = \frac{W\,l}{8\,D}$ where W = total load; l = span; and D = depth, both in feet. This we may take as a sufficient guide, as the load is tolerably uniformly spread over the span. In the present case W = 45 tons; l = 80ft., and D = 10ft.; therefore $S = \frac{W\,l}{8\,D} = \frac{45 \times 80}{8 \times 10} = 45$ tons. We will, therefore, decide to make the total strain on the top member 45 tons throughout its length. Let it be decided that the diagonal tie bars shall form the sides of isosceles triangles, having *a b*, *b c*, &c., for their bases; bisect therefore these bases, and at the points of bisection draw perpendiculars downwards from them; then the vertices of these triangles must lie somewhere in such perpendiculars because they are to be isosceles triangles. Now, in order to determine the strain upon a given bar, a point must be found about which the force or forces act to produce such a strain, and the strain upon the bar multiplied by its distance from the given point must be equal to the sum (or difference, as the case may be) of the forces multiplied by the distance of its direction from the same point. The points about which the moments are to be taken are the angles opposite the bars under consideration; therefore, for the top member strains the centres of moments will be *g*, *h*, *i*, *k*, *m*; and for the strains on the bars of the bottom member, the points *b*, *c*, *d*, *e*, *f*.

First is to be determined the height of the triangle *a b g*. There is only one force acting upon the bar *a b*; it is the reaction 22·5 tons acting at the distance *o g* about the centre *g*. At D is an enlargement of the toe of the rib to twice the scale of diagram C; on this enlargement from *a* mark off on the horizontal line *a p* equal any convenient distance—say 3ft., and set up the vertical line, *p q*, parallel to the reaction at *a*. The distance of the bar *a b* from any centre of moments in the line *p* must be to the distance of the reaction (3ft.) from the same point inversely as the thrust on the bar *a b* is to the reaction; let the distance be *r r*, and at that distance and parallel to *a b* draw the straight line *s s*, intersecting *q p* in *t*, then as the centre of moments must lie in the bar forming a side of the triangle *a b g*, *t* will be a point in *a g*; join *a t*, and produce the line to intersect the perpendicular set up at the bisection of *a b*, this intersection being at *g*, then *g* will be the vertex of the triangle *a b g*. The value of *r r* will be: $r\,r = a\,p \times \frac{22{\cdot}5}{45} = 3 \times \frac{1}{2} = 1{\cdot}5$, and the height of the triangle *a b g* scales 2·2ft. and *o g* scales 4·4ft. which is the correct proportion to give a strain of 45 tons on *a b*.

We will now proceed to show how the heights of the remaining triangles are to be determined so as to keep the strain on the top member at 45 tons throughout; as these are calculated quite independently of each other, any one may be taken; as an example, the height *u i* for the triangle of which the bar *c d* is the base, will be taken. Draw the horizontal lines *u v* and *i v'* to meet the direction of the reaction (22·5) at *v* and *v'* respectively. The moment of resistance of the bar *c d* about the point *i* will be equal to the direct resistance of bar *c d* multiplied by the height *u i* of the triangle *c i d*; the moment of strain about *i* will be the reaction multiplied by the horizontal distance *v' i*, less the loads at *b* and *c* multiplied by their respective horizontal distances from *i*, because the reaction acts vertically upwards and these loads act vertically downwards.

Let the horizontal distance *v i'* be represented by x, and let w and w' equal the loads at *b* and *c* respectively; let also y and y' be the horizontal distances of the loads w and w' from *a v*, R = the reaction; S = the strain on bar *c d*; and H = *u i*, the height of the triangle *i d*. Then as the moments of strain and resistance must be equal:—

$R.\ x - w\,[x - y] - w'\,[x - y'] = S.\ H.$

$x\,[R - w - w'] = S.\ H. - w\,y - w'\,y'$; therefore $x = \frac{S.\ H - w\,y - w'\,y'.}{R - w - w'}$. Had a triangle further along the rib been taken there would have been more minus quantities $w''\,y''$, $w'''\,y'''$, etc., but the principle is the same throughout.

All the terms in the equation except x and H are known for each case, hence the ratio of these quantities can be found, and subsequently by a geometrical construction their actual values. For the bar under consideration $w = w' = 5$ tons; y = 5ft. (scaled from diagram) y' = 11·9ft; R = 22·5 tons, and S = 45 tons; therefore, $x = \frac{45.\,H - (5 \times 5) - (5 \times 11{\cdot}9)}{22{\cdot}5 - 5 - 5} = 3{\cdot}6\ H - 6{\cdot}76$.

The geometrical construction by which the actual values of x and H are found is shown at E. Draw the angle *i' i z'* equal to the angle *u i v'* (diagram C), and from *i* upon the line *i i'* mark off any convenient distance *i u'*, say 3ft.; now if 3ft. was the height of the triangle, then $x = 3{\cdot}6 \times 3 - 6{\cdot}76 = 10{\cdot}8 - 6{\cdot}76$, or, $x \times 6{\cdot}76 = 10{\cdot}8$. Make *i z'* = 10·8, and from *z* on the line *z u'* mark off *z u''* = 6·76, and through the point *u''* and at right angles to *z u'* and *z' i* draw a line indicating the direction of the reaction 22·5, and from *u'* let fall the perpendicular *u' z''* upon the straight *z' i*. Then it will be found that the distance *z'' i* scales 1·71ft. *z z''* = 10·8 − 1·71 = 9·09. We can now compare the figure *u'' v'' i u'* in E with *v v' i u* in C, observing that *v u* scales 16·1ft., and that 6·76′ is the fixed value of *z u''* and *z' v''*. On the diagram *z u'* = 9·09ft., but let the value of *u'' u'* become equal to that of *v u* (diagram C) then *z u'* = 16·1 + 6·76 = 22·86, by proportion, 9·09 : 22·86 :: 3 : H; or $H = \frac{28{\cdot}6 \times 3}{9{\cdot}09} = 7{\cdot}54$ft. In like manner the heights of the other triangles are found, and all marked off as shown on diagram C, and thus the positions of the points *h i k* and *m* are determined and the diagram completed. We can now ascertain by a check calculation whether these heights give a constant strain on the top member. The general formula for the strain on any bar is $S = \frac{R\,x - w\,(x - y) - w'\,(x - y') - \&c.}{H}$

The values of x are found from those of H; thus in the above instance it is $x = 3{\cdot}6\ H - 6{\cdot}76 = 3{\cdot}6 \times 7{\cdot}54 - 6{\cdot}76 = 20{\cdot}384$, say, 20·4ft. The values of x being all worked out and marked on the diagram, the results may easily be tabulated as under:—

Point about which Moments act.	Bar	$\frac{R\,x - w\,x - \&c.}{H}$	Total strain tons.
g	*a b*	$\frac{22{\cdot}5 \times 4{\cdot}4}{2{\cdot}2} =$	45
h	*b c*	$\frac{22{\cdot}5 \times 12{\cdot}2 - 5 \times 7{\cdot}2}{5{\cdot}3} =$	45
i	*c d*	$\frac{22{\cdot}5 \times 20{\cdot}4 - 5\,(15{\cdot}4 + 8{\cdot}5)}{7{\cdot}54} =$	45
k	*d e*	$\frac{22{\cdot}5 \times 28{\cdot}2 - 5\,(23{\cdot}2 + 16{\cdot}3 + 7{\cdot}8)}{8{\cdot}84} =$ ...	45
m	*e f*	$\frac{22{\cdot}5 \times 36 - 5\,(31{\cdot}0 + 24{\cdot}1 + 15{\cdot}6 + 7{\cdot}8}{9{\cdot}28} =$	45

As w has the same value for each point at which it occurs the expressions are simplified thus: instead in the expression for bar *d e* of putting the negative quantities $-5 \times 23{\cdot}2 - 5 \times 16{\cdot}3 - 5 \times 7{\cdot}8$, they are bracketed as shown. To find the strains upon the bottom member the heights are scaled on the diagram and marked on as shown.

The strain on *a g*, as well as that upon *g h*, is determined by moments about the point *b*; *a g* produced so nearly coincides with *g h* that it cannot be shown apart from it in the illustration; but the heights of the triangles *a b g* and *g b h*, as scaled from a larger diagram, are given, being respectively 4ft. and 4·1ft. The strains on the bars of the bottom members are as follows:—

Point about which Moments act.	Bar	$\frac{R\,x - w\,x - \&c.}{H}$	Total strain tons.
b	*a g*	$\frac{25{\cdot}5 \times 5}{4} =$	28·12
b	*g h*	$\frac{25{\cdot}5 \times 5}{4{\cdot}1} =$	27·4
c	*h i*	$\frac{22{\cdot}5 \times 11{\cdot}9 - 5 \times 6{\cdot}9}{6{\cdot}75} =$	34·6
d	*i k*	$\frac{22{\cdot}5 \times 20{\cdot}4 - 5\,(15{\cdot}4 + 8{\cdot}5)}{8{\cdot}65} =$	39·2
e	*k m*	$\frac{22{\cdot}5 \times 29{\cdot}9 - 5\,(24{\cdot}9 + 18 + 9{\cdot}5)}{9{\cdot}6} =$...	48·2
f	*m m'*	$\frac{22{\cdot}5 \times 40 - 5\,(35 + 28{\cdot}1 + 19{\cdot}6 + 10{\cdot}1)}{9{\cdot}75} =$	44·8

It will be seen from this that the strain at the centre approximates very closely to the 45 tons with which we started.

The values of x are all marked on the diagram below the line *a n* for the sake of clearness, being terminated by vertical lines let fall from the points to which they refer. The lines from the points in the top member are plain dotted, those from the bottom member a short line and two dots alternately; where the points (*d* and *i*) fall in one straight line, a short line and one dot alternately are used. The values of $(x - y)$, $(x - y')$, $(x - y'')$, &c., are found from the numbers immediately above the line *a n*, which are added together as required. By thus marking the results of all calculations as they proceed upon a diagram, the operations are much facilitated, confusion is avoided, and a permanent record is prepared in the most convenient form, giving any information required at a glance.

There now remain to be determined the tensions upon the diagonal ties, and in computing these it is necessary to commence at the foot *a*, and take them *seriatim* until the centre is reached. The strain on *g b* would be determined by moments about *h*: but the bars *a g*, *g h* are so nearly in line that the strain is quite insignificant, and may be neglected, as there is sure to be ample material to cover it; we shall, therefore, pass it by, and commence with the bar *b h*, the moments in this case being taken about *c*. The perpendicular distances of the directions of the forces from the centres about which they act are found by measurement—that of the resistance of *b h* is 7·35ft.; the sum or difference, as the case may be, of the movements of force acting about *c*, divided by this distance, will give the strain on the bar. In this case there are two forces—one acting in the direction of *a b*, and tending to put the bar in tension; its amount is found thus:—Produce *a b*, as shown by the dotted line, until it meets a perpendicular drawn to it from *c*; the length of this perpendicular measures 2·4ft., and the strain on *a b* is 45 tons; hence the moment is 45 × 2·4. The other force is the load at *b*, 5 tons acting vertically at a horizontal distance of 6·9ft. from *c*; this tends to put the bar *b h* in compression, and its moment is 5 × 6·9; the resultant force on the bar will be in tension, and equal to $[45 \times 2{\cdot}4 - 5 \times 6{\cdot}9] \div 7{\cdot}35 = 10$ tons. *h c* is the next bar in order; its distance from the point *i*, about which the moments are to be taken, is 8·3ft. Here there are two forces in action: one from the bar *g h*, which, being produced, meets a perpendicular 1·7ft. long; this moment produces tension. The direction of the bar *b h* being produced, meets a perpendicular 3·7ft. long, and the force tends to put compression on *h c*; the resultant tension will be $(27{\cdot}4 \times 1{\cdot}7 - 10 \times 3{\cdot}7) \div 8{\cdot}3 = 1{\cdot}15$ tons. The strain upon *c i* is caused by three forces acting about *d*; that due to the bar stress on *b c* acting at 2·4ft. from *d*, causing tension, and the load at *c* and stress on *h c* both tending to produce compression. It may here be observed that the moment of the first of these forces will be the same for every top joint, because the points *a*, *b*, *c*, *d*, *e*, *f*, are equally spaced on a circular arc, and the strain on the bars between them is constant throughout. The strain on *c i* = $[45 \times 2{\cdot}4 - (5 \times 8{\cdot}5 + 1{\cdot}15 \times 8{\cdot}7)] \div 8{\cdot}5 = 6{\cdot}5$ tons. The numbers can be followed on the diagram. The moments taken about *k* give the tension on *i d* = $(34{\cdot}6 \times 1{\cdot}2 - 6{\cdot}5 \times 5{\cdot}3) \div 7{\cdot}8 = 0\,9$ ton. As the bar *i d* happens to be vertical, its stress will act in the same direction as the load at *d*, the two added together making 5·9 tons; the tension on *d k* will therefore be = $(45 \times 2{\cdot}4 - 5{\cdot}9 \times 9{\cdot}6) \div 8{\cdot}9 = 5{\cdot}8$. By the same method the strains on the remaining bars will be:—On *k e* = $(39{\cdot}2 \times 0{\cdot}95 - 5{\cdot}8 \times 6{\cdot}2) \div 7{\cdot}45 = 0{\cdot}17$ ton; on *e m* = $[45 \times 2{\cdot}4 - (5 \times 10{\cdot}2 + 0{\cdot}17 \times 9{\cdot}9)] \div 8{\cdot}9 = 6{\cdot}3$ tons; the strain on *m f*, found by taking the moments about *m'*, is = $(42{\cdot}8 \times 1{\cdot}55 - 6{\cdot}3 \times 6{\cdot}6) \div 75 = 3{\cdot}3$ tons.

We have now completed the calculations necessary to enable the rib to be designed in accordance with the conditions pre-supposed, and all that remains is to adapt the sections of the bars to the strains to which they will be subjected and design suitable joints for their interconnection. Interesting as it would be to pursue this subject, want of space precludes our doing so here. The point upon which we started was to show how to design the rib to suit fixed conditions, and to do so without having recourse to a series of approximations or the guess-work of the method of trial and error, a system, in our opinion, as clumsy and unsatisfactory as it is illogical. Other conditions than those here chosen for illustration may be laid down; for instance, the apex points in the lower member

may be fixed, and those in the upper require to be determined, but the mode of reasoning would be analogous to that pursued above, and whatever the nature of the restrictions imposed, provided only that they are not contradictory, there need be no trouble in complying with them.

CONTEMPORARY BRITISH ARCHITECTS.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

HAVING reached over twenty plates of portraits of living architects in England, it becomes necessary to specify at the commencement of the letterpress descriptions the number of the selection herewith given. It is the twenty-first double-page sheet. In the centre of the group thus brought together is, however, a portrait of the late Sir Edwin Chadwick, K.C.B., who, although in no sense an architect, was intimately connected with the science of building—as the father, so to speak, of improved sanitation, and we therefore make no apology for introducing his portrait on this occasion. His death, which occurred a few weeks ago, was announced with regret, though Sir Edwin passed away from the scene of his usefulness full of years and honours at the advanced age of 91. Educated as a barrister, Edwin Chadwick early devoted himself to the study of the causes of zymotic diseases, and the means by which the losses of health and life resulting therefrom could be diminished. Chadwick then preached to a generation with ears that were deaf and eyes that were blind to the startling facts he brought before them; but though his views on cleanliness were rudely ridiculed, Jeremy Bentham left him a small legacy and part of his library. Earl Grey nominated Chadwick, in 1833, as assistant-commissioner to inquire into the operation of the Poor Laws of England and Wales, and the outcome of his searching investigations and elaborate report was the passing of the Poor Law Act. Mr. Chadwick was appointed secretary to the Poor Law Board, and during more than twenty years his labours in connection with it and the General Board of Health were untiring. Factory labour, half-time, and instruction occupied some of his attention. In 1838 he obtained a special commission of inquiry into the prevention of disease and the improvement of dwellings in England and Wales, and in 1843 one on interments in towns, which laid the foundation for subsequent legislation. In 1848, Mr. Chadwick was appointed a Commissioner of the General Board of Health, from which he retired nearly six years later on a well deserved pension of £1,000. His services to the country were only tardily and grudgingly acknowledged. Created a C.B. in 1848, he was only fifteen months ago advanced to the rank of knight in the same order. His labours have been indefatigable in all matters relating to the health and welfare of the people, and were continued to the last. His volume on "The Health of Nations," of which an abridged edition, revised by Dr. W. B. Richardson, has just been published, is a standard work on the subjects of the benefits conferred on the people by attention to hygienic rules. Chadwick was an earnest worker in the Sanitary Institute from its formation, and was half-a-dozen years president of the newly-organised Association of Public Sanitary Inspectors, and his address to that body, read in his absence through enfeebled health, at the Annual Congress at Leamington in October last, was as fresh and vigorous in style as any of his earlier writings. His funeral took place at Mortlake Cemetery. His portrait is an admirable one, taken this year by Messrs. Done and Ball, of Baker Street, W.

The first architect represented on our plate is Mr. Julius Alfred Chatwin, F.S.A. (Scot.), F.R.I.B.A., of Birmingham. He was born in 1830, and was a pupil at King Edward's School when the present Archbishop of Canterbury and the late Bishop of Durham (Dr. Lightfoot) were scholars there with him. Afterwards Mr. Chatwin matriculated in London, and adopted architecture as his profession. He was first placed in the office of Messrs. Branson and Gwyther, the largest local building firm of that day, and was, in 1851, articled to Sir Charles Barry, and during his term with that distinguished architect the new palace at Westminster was in course of erection, as well as many other important buildings. During this period Mr. Chatwin regularly attended the evening classes of the first Schools of Design, originated by Prince Albert, and which were held at the old Royal Academy Rooms, at Somerset House, under the direction of such men as R. Redgrave, R.A., J. R. Herbert, R.A., and other artists of distinction. On leaving Sir Charles Barry, Mr. Chatwin commenced practice in Birmingham, and he has restored and erected thirty-five churches. Amongst his principal works must be mentioned the artistic transformation of the ugly but ancient Puritanised brick church of St. Martin's into one of Birmingham's handsomest ecclesiastical structures. The restorations and additions to Aston Church is Mr. Chatwin's *magnum opus*. The same architect's work may be seen in the Catholic Apostolic Church, Summer-hill; the parish churches of Handsworth, Edgbaston, and St. Philip's, to the latter of which he added a chancel; the church of Penkridge, and others—too many in fact to catalogue at length. Lloyds' Bank in Lombard-street, London, as well as their buildings in Birmingham, are by his hand, as are the Birmingham Joint Stock Bank, Compton and Evans' Bank at Derby, Great Western Hotel, Birmingham, King Edward's Schools, Aston, Wolverhampton Art Gallery and Art Schools, Lench's Trust Almshouses, Conybere-street, the Evans Cottage Homes, and many other works. In most of the church restorations we have mentioned the architect has had one idea, and that has been to produce, by simple breadth of treatment, "a feeling of repose." Mr. Chatwin is vice-president of the Royal Birmingham Society of Artists. This position Mr. Chatwin has held since the death of Mr. J. H. Chamberlain. Mr. Chatwin is also a Fellow of the Antiquarian Society of Scotland, and a member of most of the local archæological societies. Mr. J. A. Chatwin married in 1869 the second daughter of Mr. Edmund Boughton, J.P. His portrait is by Mr. Harold Baker, of Birmingham.

Mr. Samuel Joseph Nicholl, A.R.I.B.A., comes next on our plate. He was apprenticed in 1840 to his relative, Mr. Joseph John Scoles for seven years as a member of the Coach-makers' Company of the City of London, serving his time as Mr. Scoles had served his apprenticeship to his kinsman, Joseph Ireland, Bishop Milner's architect, a friend of John Carter the antiquarian, and one of the earliest of the Gothic revivalists. Mr. Nicholl therefore claims a sort of hereditary connection with the revival of Mediæval art, and was one of the early workers, for in his days of pupilage every bit of ornament had to be drawn to the full size and occasionally modelled for the carver or mason. He was a student of the R.I.B.A., gaining the students' prizes and silver medals in 1845-6 and 7, and was elected an Associate in 1847. Working much for his old master and others, one of the earliest works to which his name was attached was the Chapel of the Sacred Heart, St. Francis Xavier's Church, Liverpool, a drawing which was exhibited at the R.A. in 1852, and subsequently engraved for the BUILDING NEWS. He was a member of the committee of the Architectural Association in 1851, and one of the promoters of the Architectural Exhibition, which did not prove more interesting to the general public than the architectural room at the R.A. now is. Since the days of his pupilage he has been actively employed in the design of every class of building and furniture, his ecclesiastical buildings having been exclusively for the Roman Catholic Church, the latest of this class being the restoration, after a fire which occurred last Christmas, of the church of Our Lady, St. John's Wood, originally designed by his old master, Mr. J. J. Scoles, in 1832, but with high altar, lady altar, and reredoses, a pulpit, and Communion railing, with other furniture from Mr. Nicholl's designs. Mr. Nicholl writes: "As I do not consider my career as an architect yet closed, I leave for the future the compilation of the complete list of my works." The photograph is by Mr. Vernon Kaye, of Kensington.

Mr. John Littlewood, F.R.I.B.A., served his articles with Messrs. Travis and Mangnall, architects, Manchester, and was engaged with that firm during the erection of many important buildings, including Watts's Warehouse in that city. Afterwards Travis and Mangnall dissolved partnership, when Mr. John Littlewood entered into partnership with the late Mr. Wm. Mangnall, and soon after Mr. Mangnall's death joined his brother, Mr. W. H. Littlewood, in 1874, the two having since carried on the practice under the name of Mangnall and Littlewoods. Mr. John Littlewood is a member of the Manchester Society of Architects, was elected an Associa of the R.I.B.A. in 1882, becoming a Fellow 1887. Mr. W. H. Littlewood, F.R.I.B.A., al served his articles with Messrs. Travis a Mangnall, of Manchester, and was engaged wi that firm until they dissolved partnership. H remained with Mr. Mangnall and his broth until Mr. Mangnall's death, and in 1874 join his brother, Mr. John Littlewood, under t name of Mangnall and Littlewoods. Mr. W. H Littlewood is a member of the Manchest Society of Architects, was elected an Associa of the R.I.B.A. in 1882, and became a Fello in 1887. He is also an Associate of the Mar chester Academy of Artists, and frequentl exhibits at the Picture Galleries. Messr Littlewoods have been successful in numero competitions. They have carried out the ex tensive improvements and addition to the marke at Smithfield for the Corporation of Manchest and have erected a large Market Building Campfield for the same Corporation, for whor they have also carried out considerable ne works in their extensive Gas Works. They hav also been largely engaged in the construction o hotels, intances of which are the Victoria Hote at Southport, Palace Hotel at Birkdale, nea Southport, and Imperial Hotel and Hydro Blackpool. They have been largely employe by the guardians of the Chorlton Unio in the erection of schools and homes, thei new offices, and also extensive addition to their union hospitals, a recent alteratio being additions for 160 beds, and a detached ne residence for 40 nurses. At Peel, Isle of Mar they erected an hotel and other residential build ings for the Peel Parade Co. The Exchang Arcade Buildings, and numerous other busines premises in Manchester were also erected unde their superintendence. They have also super vised several ecclesiastical buildings, instance being the Presbyterian Church, Whalley Rang restoration of the Parish Church of Holmfirth and additions to the Church of St. John in th same district. They are now engaged upon tw sets of baths for the Borough of Salford, on being for Broughton, and the other for th Regent-road district, both of which wer obtained by separate competitions. The first named has been illustrated in the BUILDIN NEWS, and the latter will shortly appear. The are likewise engaged upon extensive additions t the business premises of Mr. William Paulden Stretford-road; upon additions to Lewis's Market-street; upon extensions to stables for th Manchester Carriage and Tramway Co.; an upon other minor works. Both portraits ar by Messrs. A. Brothers and Co., of Manchester

The last portrait to notice on the page is tha of Mr. G. Washington Browne, architect of th Edinburgh Public Library, the largest and mos important building of this kind in Scotland, fo the erection of which Mr. Andrew Carnegie, o Pittsburg, presented £50,000 to the Scottish capital. Mr. Browne received his early training i Glasgow, his native city. In 1875 he went t London, and passed through the offices of Messrs J. J. Stevenson and H. R. Robson, Mr. Blomfield (now Sir Arthur), and Mr. Wm. Eden Nesfield. In 1878 he gained the Pugin Travelling Studentship, and published a folio volume of his sketches and measured drawings made in connection therewith. After studying for a short time in Paris he returned to Scotland, and in 1881 became partner with Dr. Rowand Anderson, under the style of Anderson and Browne, and subsequently Wardrop, Anderson, and Browne. At the close of 1885 Mr. Browne severed his connection with the firm, and has since practised most successfully by himself. His design for the Edinburgh Public Library was placed first by Mr. Waterhouse from among upwards of 30 designs submitted by his contemporaries in Edinburgh, and the building was recently opened by Lord Rosebery. In addition to the library, the following are among the works carried out or in progress from Mr. Browne's designs:—U. P. Church, Braid; U. P. Church, Brechin; Halls for Davidson U. P. Church, Edinburgh; Organ-chamber and Case for Broughton-place U.P. Church, Edinburgh; remodelling Rooms of the Philosophical Institution, Edinburgh; additions and alterations to Craiglockhart Poor-house, Edinburgh; Sanatorium, Museum, and Class-rooms, Merchiston Castle School; Swan Memorial, Kirkcaldy; "Royston," Glasgow; "Westdel," Glasgow; "Langlees," Lanarkshire; 33, Cluny-gardens, Edinburgh; Residence for Mr. J. White, Edinburgh; Studio for Mr. D. W. Stevenson,

F.S.A., Edinburgh; House and Studio for Mr. C. Martin Hardie, A.R.S.A., Edinburgh. Mr. Washington Browne has taken an active part in the work of the Edinburgh Architectural Association, of which he was President for the two years 1884-5 and 1885-6, and is an honorary member of the Glasgow Architectural Association. The photo. is from the studio of Mr. Wm. Crooke, Edinburgh.

NOTES ON BUILDING PRICES.—IX.

By John Leaning.

RAILWAY WAGGONS.—The question of the carrying capacity of railway waggons will sometimes arise during the preparation of an estimate. About 10 tons is the limit of load, as this is the most that a horse can draw on rails in addition to the weight of the truck; and it is hardly necessary to remark that in the course of making up a goods train the loaded waggons are drawn to their position by horses. Waggons are rarely fully loaded. Often a 10-ton waggon will only be loaded with 7 or 8 tons. Very many of the London and North-Western waggons are 15ft. 6in. long, 7ft. 8in. wide, and the sides 20in. high. The general type of the waggons on the South-Eastern railway is 16ft. long, 7ft. 6in. wide, and the sides 3ft. high. Many of the waggons used for minerals are 15ft. 6in. long, 7ft. 6in. wide, with sides only 9in. high.

From the foregoing particulars and the tables of weights of materials, a complete list of which may be found in "Hurst's Handbook," it will be easy to compute the labour that will be involved in unloading, and the consequent necessities of cartage.

EXCAVATOR.

Sand and Ballast.—The prices of the materials used in this trade are a necessary preliminary to the consideration of the cost of the finished work. The rate of wages in the following calculations is to be found in Article III. Pit sand in London (generally from Fulham), delivered, 6s. per yard. In the country pit sand at the pit usually costs 2s. per yard, and to this must be added cost of cartage. Thames sand delivered within two miles of a river wharf, 5s. 6d. per yard; Thames ballast delivered within two miles of a river wharf, 4s. 6d. per yard; for each additional mile beyond two the cost would be 1s. per yard. Good Thames sand by the barge-load can be brought up to a river wharf at 2s. 9d. per yard cube; pit sand at 3s. Pit sand from the Drayton district brought to a canal wharf, Paddington Basin, 3s. 4d. per ton = $\frac{2}{3}$ of a yard = 5s. per yard. To this must be added in either case unload cart not exceeding two mile and shoot, 1s. 9d. per yard; and to the whole freight probably 100 tons = 67 yards, must be added for permission to unload; 10s. for the freight, or 1$\frac{3}{4}$d. per yard, in case of canal, and 25s. the freight, or nearly 2d. per yard, for river wharf, in such a locality as Thames-street. The charges are highest at the City wharves. But on some parts of the foreshore of the Thames, as at north end of Lambeth Bridge, and the southern shore between Lambeth and Vauxhall, the permission costs only 12s. 6d. per cargo. Carts can be taken to the water's edge, close to the barge, and sand, ballast, or broken stone can be thrown into the cart by a single throw. The time available for work in such a position is limited by the state of the tide, and is not generally more than seven hours in the day; but this inconvenience is met by the use of more men and more carts than ordinary. The man who contracts to unload and deliver will supply baskets, barrows, and planks. When a crane and buckets are available the unloading is quicker, but if the builder has to pay for their use not much cheaper. Two buckets of the capacity of a yard each are most convenient, three men filling one bucket during the transit of the other. The average time to fill a yard bucket is eight minutes, but unavoidable delays would increase it to an average of nine minutes; equivalent to 22$\frac{1}{2}$ yards per day for each man. Sand brought by the truck-load to a railway station will require one man in the truck to unload, and the driver to assist him. A sufficient number of carts should be used to keep the man in the truck occupied. What this number shall be will depend upon the length of the journey. A truck will contain about 14 yards, but the weight they will carry is limited to about ten tons —about seven yards—and will take about two hours to unload, including inevitable delays. When sand is known to exist in the part of the site which will be excavated, it will be (if of sufficiently good quality for use in the work) not only a saving of the purchase-money of sand, but also of carting the earth; the digging being alike in either case. The advantages would be as follows: Sand 5s. 6d. per yard cube, carting 2s. 6d. = 8s. per yard; but frequently the architect who knows his business stipulates that for every yard of sand procured on the site and used in the building, a certain agreed sum shall be allowed. The consequences of failure to settle the question of the disposal of sand is known to professional men by unpleasant experience. A contractor will sometimes come upon an unexpected bed of sand, and will not only obtain enough for his building, but, there being no restraining condition, will dig much more than he requires and sell it. An instructive instance of this kind occurred in a London suburb a few years ago. As a preliminary to the development of a building estate, the freeholder contracted with a roadmaker to construct the roads. The whole course of these roads lay over beds of sand near the surface, and well adapted for building purposes. There being no adverse conditions in his contract, the contractor proceeded to dig it out to a considerable depth and sell it, the excavation being filled with rubbish of all kinds, the permission to shoot being in all cases paid for at per load. A load of sand is a cubic yard, and should slightly exceed 21 striked bushels, but it never does. The War Office schedules insist on 22 bushels to the yard.

Clay for Puddling.—The cost of clay will vary according to the position of the works, the quantity, and the purposes for which the clay is required. In many parts of London, enough for the purpose (it may only be required for puddling around the joints of drain pipes) may be found on the site. In other cases it may be obtained from works in progress near at hand, as in the case of the construction of a section of the Northern Thames Embankment (Mr. Ridley's contract). A very large proportion of the clay required for puddling the coffer dams was brought from the excavations for the Metropolitan Railway by the contractor for that work, he not only charging nothing for the clay, but paying a sum per load for permission to deposit it. When required in considerable quantity it may be drawn from the nearest brickfield. Clay delivered in the City of London costs 5s. 6d. per yard; in the suburbs, 3s. 6d. per cubic yard. In the country it may commonly be bought for 1s. per yard at the field, to which must be added cartage according to distance. The labour of tempering varies considerably; but a labourer should do not less than 4 yards in a day. Rankine says: Tempering, ·3; spreading, ·3 per yard cube. Cost at 6$\frac{1}{2}$d. per hour, 1s. 3$\frac{1}{2}$d. per cubic yard. Constant, ·25.

Portland Cement—Is sometimes sold by the cental, or trade bushel, of 100lb. weight, but generally by the ton; will weigh from 90lb. to 130lb. per bushel, and costs about 35s. per ton, including the use of sacks, delivered in London within five miles of the work, or at any London railway terminus. The average weight per bushel may be reckoned at 112lb. There are commonly 10 sacks of two striked bushels each to the ton. The weight last mentioned is most frequently specified; but it is rarely the case that anyone takes the trouble to weigh it. In arranging with contractor for its supply the merchant usually agrees to deliver cement of the specified weight, and will take the responsibility.

Stone Limes.—The lime merchants supply their own railway trucks, whose capacity varies, carrying 10 yards under 5 tons; 12 yards under 6 tons, 14 yards under 7 tons. For country work it is nearly always necessary to buy lime by the truck-load, and the same arrangement as suggested for sand will be necessary. The driver and a labourer should (including delays) deliver into carts about 4 yards in an hour. The usual form in which stone lime is used by the excavator is ground to powder. A yard of ground lime is the result of grinding a cubic yard of stone lime in lumps, and will measure about 16 striked bushels. Is delivered in London at 11s. per yard, use of two-bushel sacks 1d. each by some merchants, by others nothing.

Lias Lime.—Good ground lias lime costs 25s. per ton delivered in London. The number of bushels in a ton varies (dependent upon the degree of freshness) from 27 to 33 bushels; a common average is 30 bushels. Add for use of bags as before. The uniform charge (included in the foregoing prices) for grinding a yard of lump lime is 1s.

Burnt Ballast.—Sometimes burnt ballast is specified as one of the ingredients of concrete. As such cases occur where the digging is in clay, the requisite quantity is often obtained from the excavation, or is procurable on the site. The digging and depositing of the clay is of equal value whether to be burned or not. A ton of common coal (a mixture of small coal and slack) will burn 12 yards of clay. As the burning has to be done further away from the proposed building than ballast would be shot, filling barrows and wheeling must be reckoned for, and the disposition of the coals and clay will take a labourer about one hour per yard. In the country the wheeling into heap and burning is done as low as 2s. per yard. The whole process is described in Seddon's "Builders' Work." Slack is delivered at country stations in loads of eight or nine tons; the cost of unloading and delivering into carts and cartage to the site must be reckoned for. The cost of slack at country stations is about 14s. per ton. In the neighbourhood of London the small coal and dust which accumulates in the coal depôts of railway stations is used—the price is about 15s. per ton delivered.

Rubbish.—Hard, dry rubbish for filling in often arises in sufficient quantity on the building. If the works are pulling down and alteration, its deposit beneath pavings would be a saving compared with carting away. In town it may often be obtained for nothing at an adjacent building which is being pulled down, in which case so many loads carted would represent the cost; in many cases, however, it would have to be paid for besides. And similarly, the carman who knows where to dispose of hard rubbish will reduce his price for cartage. In the country it will sometimes be necessary to break up bricks or buy gravel to make up the requisite quantity. A common contract price in London for "hard, dry brick or stone rubbish, and filling in and ramming," is 4s. per cubic yard. When it is known that the works will produce enough for the purpose, the cost of basketing or wheeling, and a little breaking and levelling is generally about 1s. 6d. per yard.

Pumping.—The removal of water from the trenches and basement does not often entail much expense, but sometimes it does. The judicious contractor lays his drains as early as he can in the progress of the works, which enables him to dispose of the water as it is baled or pumped. In London, land water seldom troubles the contractor; the ground being thoroughly drained by the deep sewers. In the suburbs of London or in the country the shallower sewers, or their entire absence, give reasonable cause of apprehension. Inquiry in the neighbourhood as to the depth at which water is reached is always necessary so as to know what may be expected; as the architect has generally done this, he has probably taken constructive precautions for the exclusion of water, and these would be adopted by the builder as soon as possible. Except in very wet seasons the rain water causes but little inconvenience if the contractor takes the precaution of cutting shallow channels to prevent the surface water from running into the trenches. It is impossible to give any rule for estimating the cost. Small quantities would be baled, for larger quantities a chain pump would be necessary, and for very large quantities a pulsometer. In most cases the digging a sumpt towards which the water may drain and be pumped from is a convenient expedient. In any case the trench stage of the work does not last long, and when water is troublesome is shortened to the best of the contractor's ability. Comparison of similar cases and a record of observations will be useful to the estimator, but the cost is generally small.

SOCIETY OF ENGINEERS.

A VERY interesting visit was made on the 16th September by the Society of Engineers to the L. and N.W. Railway works at Crewe.

Upon the arrival of the visitors at the works (which cover an area of over 85 acres of ground), they were conveyed to the Bessemer steel converting house, where the process of steel-making was shown, after which they proceeded past the Siemens-Martin furnaces to the 14in. merchant mill, where the spring plates and fish plates are rolled. Here the latter, after being passed

through the rolls, are sawn to the required lengths, punched, straightened, and finished ready for sending away. Thence to the rail mill, which was occupied in rolling 30ft. lengths of rails, 90lb. per yard; thence to the points and crossings shop, where the different kinds of switches and crossings were in process of manufacture. The next shop which was visited was the boiler shop. Here locomotive and stationary boilers, as well as bridge work, were seen in different stages of manufacture, the hydraulic riveting machinery being especially worthy of notice. Thence they passed on to the flanging shop where the various plates used in the boilers are stamped and flanged under powerful hydraulic presses. After viewing the boiler mounting shop, where the boilers are tubed, mounted with their various fittings, and tested, they visited the iron foundry, where the different machines for plate moulding may be seen in operation. From here they passed on to the tender shop, where, in addition to the tenders and tanks for the locomotives and steel frames for the 42ft. carriages with the radial axle were inspected. The next place of interest is the forge, where was seen the large plate mills, used for rolling boiler and frame plates. Other objects of interest in this department were a large circular saw for cutting up bars and slabs cold, a Ramsbottom 30 tons duplex steam-hammer, and the tire rolling and finishing mill. They next visited the iron forge where the merchant bars are rolled, and through the steel foundry to the paint shop, where the various processes in connection with painting the engines were seen. Here the party re-entered their special saloon carriages, and were conveyed to the "deviation" shops, and were shown through the testing department, where the chain and other testing machines were seen at work. Thence they passed through the millwright's shop to the joiner's shop, where a number of wood-working machines were seen in operation. They next visited the iron and stamping forge, where the various articles manufactured there were exhibited. The next shops visited were the erecting shops, where the building of new locomotives was in progress, as well as repairs to engines which have been running. Thence to the wheel shop, where a number of cast steel wheels and compound engine cranks and straight axles were seen in various stages of completion; also the machine for cutting out the throws of the crank. They next came to the fitting shop, where the various parts of the engines are fitted together and finished before being sent to the different erecting shops. In this shop also were seen a number of tools which have been especially designed for turning out the work quickly and economically. This being the last shop to be inspected, the visitors rejoined their saloon carriages, and were conveyed back to London by express train.

CHIPS.

A meeting of the Archæological and Architectural Society of Durham and Northumberland will be held to-day (Friday), when Whicham Church, Hollinside House, the old seat of the Hardinge family, the Hermit's Chapel at Friarside, and the churches of Ebchester and Medomley will be visited.

The restoration of the central tower of the Priory Church of Leominster has been commenced this week. Mr. Edwards, of Leominster, is the builder.

A new wharf, to be known as East St. Paul's, is being built between Upper Thames-street and the river. Messrs. Chambers and Son, of College-hill, are the architects, and Messrs. Holland and Hannen the builders.

As a memorial of the late Archdeacon Sanctuary, it is proposed to place a stained-glass window in his church at Powerstock, and to complete the spire of West Milton Church.

The foundation-stone of a new church at the Meir, near Longton, Staffs, was laid on Friday in last week by the Suffragan Bishop of Shrewsbury. The church is to be erected for the accommodation of an outlying portion of the parish of Caverswall. At present only the nave will be erected, leaving the chancel, transepts, organ-chamber, and vestry to be added by future effort. The total outlay for the present building will be £1,820. Messrs. Scriviner, of Hanley, are the architects of the new church, and the contract has been let to Messrs. H. and R. Inskip, of Longton.

Mr. William Holloway, for many years the proprietor of a large builder's firm in Maidstone, died suddenly on Wednesday at his residence at Aylestone, to which village he moved on retirement some three years since. He was 74 years of age.

Building Intelligence.

Bromsgrove.—The site for the new Cottage Hospital, between the New-road and Ednal-lane, is being cleared preparatory to building operations. The hospital is arranged as a central block and two side wings, comprising wards for males and females respectively, connected by corridors. Each of these main wards, which will be 35ft. by 18ft. 6in. by 12ft. 6in. in height, will afford accommodation for six beds, and at the rear of the wards are bath-room, lavatory (with nurse's sink), and water-closets, shut off by cross draughts. On either side of the main entrance are the day-room for convalescent patients, and the matron's room, the dimensions of each of which are about 16ft. by 14ft. Below are the surgical ward, operating room, dispensary, three stores, and kitchen about sixteen feet square, heating chamber, and scullery. In the yard are a mortuary, disinfecting chamber, and stores. The whole of the buildings will be one story in height, except the front portion of the centre block, which will have on first floor a large bed-room, three smaller ones, and a store room. It is proposed to carry out the work in red bricks, with pressed bricks and stone for dressings. The gables will be finished in the half-timbered style, with solid oak timbers cemented between, and with barge-boards, and the whole of the roofs will be covered with purple Staffordshire tiles. The inside walls will be finished with Portland cement, and the dado of the operating room with glazed bricks. The whole of the internal woodwork will be stained and varnished. The wards and day-rooms will have wood floors, laid double, with upper boards of narrow pitch-pine. The corridors and passages will be paved with blue and red quarries. All the soil drains will be separately arranged from the rain-water and sink drains. Mr. John Cotton, of the firm of Messrs. Cotton and Bidlake, of Birmingham, is the architect; and Mr. J. Brazier, of Bromsgrove, has taken the contract at £2,673.

Swansea.—Messrs. Evans and Co. have just had completed in Frog-street a large range of stables. The main front is of Ebbw Vale bricks, with Bridgend stone dressings, and contains house for the stable manager. Inside the entrance is an open paved yard, and opposite is a van-shed, with workshop above. A lofty arch on the left side admits to a covered yard. The stable itself is on two sides of this covered yard, the third side being occupied with the harness-rooms and washing place. The floor is paved throughout with buff adamantine clinkers, laid to falls, and draining into a covered gutter at the back of the stalls. The stable is divided into twelve stalls and two loose boxes. The whole of the stall divisions and mangers were supplied by Messrs. Musgrave and Co., of London and Belfast. The lower part of the stall doors and the doors of the loose boxes, together with passages, are filled in with pitch-pine match boarding. Over the mangers are glazed tiles of an olive green tinge. Shoots conduct down chaff, hay, and straw from the floor above. An office, weigh-bridge, washing-room, a range of lofts, corn rooms, &c., are provided in the building. The contractors were Messrs. Jenkins Bros., of Swansea, and the architect was Mr. H. C. Portsmouth, of Castle-buildings, Swansea.

On Tuesday week an inquiry was held in the Town-hall, Brynmawr, by Colonel J. Ord Hasted, on behalf of the Local Government Board, touching the application of the Brynmawr Local Board for powers to borrow £3,000 for street improvements. There was no opposition. Mr. G. A. Lundie, of Cardiff, explained his plans and estimates.

The new storm-water overflow for Preston has been completed, and on Monday sewage was run for the first time into it, so that no more foul matter will be sent into the old river bed, which is being rapidly filled up with soil taken from the dock. The sewage is carried down the new culvert to Chain Caul, where it is poured into the Ribble. The culvert has been built by Mr. John Christian.

The chairman of the City of Glasgow District Lunacy Board cut last week the first sod for the asylum about to be erected by the board at Gartloch, near Glasgow. The estate at Gartloch, comprising 347 acres, was purchased for £8,500. An asylum is to built overlooking the loch, and is to accommodate 500 insane patients. The cost of the building is estimated at about £70,000. The architects are Messrs. John Thomson and R. D. Sandilands, of Glasgow.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLI., XLIX., L., LI., LIII., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—S. and S.—C. S. and S.—R. U.—R. M. B.—C. H. W.—B. of W.—J. W. R.

Correspondence.

THERE'S WORK FOR ALL TO DO.

To the Editor of the Building News.

Sir,—Architects do not seem to be aware of the great amount of their work which is carried out by builders, especially in alterations; there would be no objection to that, only unfortunately it is invariably badly done. The employer often thinks, before he sees the result, that the builder is quite capable of "carrying out his wishes"; in fact, I am afraid he sometimes thinks he is more likely to get his own way without the assistance of an architect, and then there are many conceited and foolish employers who think they know a thing or two themselves about building. I have no hope of builders employing architects—they like to be cock of their own walk, and then they do not know that they are such duffers as they are; but considering there are so many architects with little or nothing to do, I am somewhat surprised that no effort is made by them to utilise their knowledge.

There is room for a revolution in the building trade; in fact, considering the amount of bad work, from an architectural point of view, there is an absolute necessity for one, and I would suggest that work carried out on the lines of the Brixton Co-operative Builders, where there is an architect at the head of the concern, is very much better for everybody all round.—I am, &c.,

C. F. M.

The committee recently appointed to arrange the preliminaries for establishing a Science and Art School in Gravesend have worked out the principal details of the scheme. From a large number of candidates they have selected Mr. W. A. Craister, who has been for 17 years head-master of the Chester Science and Art School, for the post of art master.

Intercommunication.

QUESTIONS.

[10384.]—**Wood Block Floor.**—Which is best,—pitch or cement,—in which to lay down the blocks? Is there any fear of smell from the pitch, with a room so laid to wn, at a moderately high temperature? Or any danger of dry rot to the wood from the absorption of water contained in the cement?—TRENWITH, CARLETON.

[10385.]—**A.R.I.B.A. Exam.**—Would some Associate of the Royal Institute, or other gentleman, inform me—(1) Whether the application form must be obtained, and the entrance fee and probationary work deposited, personally by the candidate at the offices of the Institute? (2) When will the passing of the preliminary and intermediate stages before attempting the final A.R.I.B.A. become compulsory? (3) Do many candidates enter before the age of 23?—PROVINCIAL.

[10386.]—**Charges for Laying Out Building Land.**—Being asked to state charge for laying out several hundred acres of land on the sea coast for building purposes, I shall be glad of any information to assist me, or to know where same can be obtained. Will "G. H. G." kindly give me a few hints?—G. A. H.

REPLIES.

[10359.]—**Intercepting Chamber.**—"A Young Architect" insists upon a definite reply to an indefinite question. He does not state either the width of his area or whether his drain passes right across below it in a straight line. Supposing the drain does so pass, then keep the chamber one or more feet or yards back from the house, as there is room. Also, if there is room, have the fresh air inlet to one side a couple of yards or so, and either on the ground level or in face of wall. 3ft. 6in. by 2ft. 6in. is a better size than only 3ft. long. Seeing "A Young Architect" asks if it is "absolutely necessary that the back manhole should be in a line with the intercepting chamber," one is tempted to inquire why does he ask this question? It is better to have the manhole at back of the house, so that one may see right through from back to front or *vice versâ* if the drain can be laid in a straight line right through, but it is not absolutely necessary to lay a drain in a straight line right through a house if there is something important in the way. There may be several access-pipes or access-chambers in a line of drain. "A Young Architect" appears to expect your readers to know intuitively all the particulars of his job without him taking the trouble to explain them.—W. P. BUCHAN.

[10362.]—**Fire-Proof Floor.**—With reference to fire-proof buildings, in your issue of 5th, I should like to submit that from the experiments made by me, the most effective plan to adopt in preventing transmission of heat is to use a non-conducting material, such as asbestos or slag-wool. These materials are much better non-conductors of heat than air-spaces, and, unlike concrete or brick, yield to expansion of iron, in event of iron becoming affected by heat. Wooden joists, if preferred to iron girders, might be rendered perfectly fireproof if protected in such a manner as to prevent flames coming into immediate contact with them. I have note of an experiment where wooden joists, when properly protected, have withstood the influence of heat to which iron and concrete and iron and brick have succumbed. Apart from the fact that it is cheaper, it is certainly much more efficient, and the wooden joists in question were simply protected with a 1in. thickness of slag-wood, backed with ordinary plaster.—J. CHRISTIE.

[10372.]—**Farm Buildings.**—Bailey Denton's "Farm Buildings," and "Farm Buildings" by John Scott, one of Weale's Rudimentary Series, are useful books on the subject. The *Journal* of the Society of Estate Clerks of Works, published monthly, contains illustrations and articles on "Farm Buildings," by Mr. A. D. Clarke, F.S.I., and others.—THOMAS POTTER, Alresford.

[10373.]—**Noiseless Pavements.**—In reply to Edward Vergette, Town Councillor, Peterborough, wooden paving would be the most noiseless for the surrounding area of a public building. The same kind of wood paving as that used in London roadways would answer. Next in noiselessness would come asphalte.—G. H. G.

[10374.]—**Stoppage of Work Let.**—The contractors would only be able to claim for labour and material actually supplied, unless there are special terms, if the contracts are rescinded. The architect's charge would also be based on a measure and value estimate.—G. H. G.

[10377.]—**Flushing Tank.**—Try Field's or one of Doulton's flushing tanks, both of which are on the principle of the siphon.—G. H. G.

[10377.]—**Flushing Tank.**—I would advise "Country Builder" to use Adams and Co.'s Patent Automatic Flushing Tanks, which I know, from experience, to be reliable and certain in action. They have these in cast iron for building into ground to take rain water or bath waste, &c.—T. G. EASDALE.

[10377.]—**Flushing Tank.**—Try Kimpton's tip-up flush tank, sold by Braby and Co.—G. A. T. MIDDLETON.

[10377.]—**Flushing Tanks.**—"Country Builder" will undoubtedly find that a siphon will prove the best flusher. Engineers generally do condemn siphons, on account of defective working; however, the cause of such complaints is unoubtedly removed, and a siphon is now on the market (in earthenware only, as yet), for which a patent was granted in May or June last, which gives an instantaneous discharge, and at once to the full bore of the siphon pipe, of whatever diameter it may be, and with an absolutely drop, drop, drop supply. There is, I think, but one maker of the same at present; to publish the address would be a gratuitous advertisement; but I hear an advertisement is being prepared for BUILDING NEWS.—SURVEYOR.

[10379.]—**R.I.B.A. Exams.**—As a rule, I should advise a student, when selecting a subject for his "drawing from the round," to adopt one of an architectural character, such as a capital or a bench-end from some neighbouring church. Failing this, a good cast should be procured of a piece of carved ornament, by preference of the style which he intends to select for special study. A really good work on Renaissance architecture has yet to be written.—G. A. T. MIDDLETON.

[10380.]—**Building of Basements.**—If the building is to be situated, as described, on a hill-side, the basement wall should be built with a cavity, say, of two 9in. walls, with a 3in. cavity, or a 21in. wall; if the wall is 2ft. 6in. thick at ground-floor level (a very thick wall), there may be two brick-and-a-half walls, and a cavity of 3in. The damp course would be inserted above the footings, a few inches below the floor of the basement in the *inner* thickness; and also just above level of soil in the outer thickness. A dry area or rubble drain should be formed on the outside against outer wall, with a drain pipe just below the footings to carry off the water that would otherwise percolate through outer wall on the hill-side. The two thicknesses of wall should be tied by galvanised iron cramps every five or six courses in height, and about 2ft. 6in. apart. With such a construction of basement walls no damp could penetrate the outer thickness, and the little dampness that may come through could not affect the inside wall which would be cut off by the damp-course.—G. H. G.

[10381.]—**Roof—Graphic Solution.**—The proportions of W on rafter is at foot $\frac{3}{4}$ W, at middle purlin $\frac{1}{2}$ W, and at ridge $\frac{1}{4}$ W.—G. H. G.

10381.—**Roof—Graphic Solution.**—However a roof may be loaded, the solution of its stresses by graphics should be both possible and easy. If it be uniformly loaded, the weights acting upon the various points depend upon the positions of the members.—G. A. T. MIDDLETON.

[10382.]—**Altar Rail.**—It is the candid opinion of "H. W." that the words "provided expense is no object" should have been added by "A. H." to his question. Has he access to some working example? London affords several. St. Mary's Church, Charing Cross-road, in its present unfinished state, is extremely suggestive. The nave is in a pit at present, the aisle being higher. The retable is attached to the wall, and the altar stands clear, with room for passing behind, but not much. Less than 3ft. is not worth having for a passage, and 2ft. is not too much for retable, etc.; 3ft. for width of end of altar, and 3ft. to 3ft. 6in. for footpace—thus top step is 11 or 12ft. from wall. Altar rail 11 or 12ft. more is not excessive, as people overhang the rails a foot or so, and it does not tend to reverence to reduce the room allowed for administration to a minimum. Better omit a step or two than run any such risk. The general adoption of side altars, whereat steps are not wanted, leaves the architect free to introduce several more under the principal altar within the railed space, or even to omit the rails entirely. If "A. H." will write to "H. W." stating fixed conditions, he will endeavour to help by reference to examples—some more melancholy than admirable perhaps. Is the altar to be a low altar high up (that at the Cathedral, Canterbury, exemplifies), or a high altar low down (St. Alban's, Holborn, comes to mind)? Country or town also regulates much, and the taste of the parson is uncommonly self-assertive.—H. W.

[10383.]—**North Devon.**—Braunton, Georgeham, and Heanton churches can be seen from Braunton Station as a centre. Mitchell, of Vellator, or some boatman should be arranged with for next day, perhaps. Then, by dropping down the Braunton Pill and sailing across the estuary of the Taw at Appledore, a walk to Northam and Bideford, either taking in the Pebble Ridge or not, might be sufficient. If the latter is decided on, boatman should be retained for return journey. Otherwise a trip to Barnstaple and so home by train might be managed, the boatman being dismissed on landing. Georgeham Church might be visited, after seeing that at Morte Hoe, per Lee, and the Bull Point Lighthouse, returning by Braunton Station—Berrynarbor, Coomb Martin, and Lynton are in the opposite direction. The woodwork in Braunton Church seats is as thick as a brick.—H.

A new wing, which has been added to the Convalescent Home at Felixstowe, was opened on Wednesday week. Mr. E. F. Bisshopp, of Ipswich, was the architect.

The latest reports fram Salonica state that the famous Mosque of St. Sophia was burnt down, the minaret falling with a terrible crash. The palace of the Greek Archbishop, the Greek church and hospital, the Greek and British consulates, 15 Jewish synagogues, and a large Greek school were also destroyed, in addition to some 2,000 houses, the latter valued at not less than half a million sterling.

An installation of the electric light is at present being carried out at the church and parochial hall of St. John's the Divine, Vassall-road, Brixton. About 300 incandescent lamps will be used, and a motor is also being put down for blowing the organ of the church electrically. The church is one of the finest works of the late Mr. G. E. Street, R.A., and has recently been completed by the addition of a tower and spire, one of the loftiest in South London, designed by Sir Arthur Blomfield.

The Glasgow Town Council accepted on Monday tenders amounting to £8,249 for the building of four tenement shops and dwelling-houses in Stobcross- and Lancefield-streets. A report was received, but referred back for future consideration, from the committee having in hand the disposal of sewage from the eastern portion of the city. The committee recommended that the sewage be dealt with by precipitation on the plan adopted at Sheffield, and advised that the works be established on the site of the disused waterworks at Cranston Hill, Dalmarnock; the estimated outlay would be £38,000, including the transfer of £4,000 to the water committee for the Cranston Hill site.

WATER SUPPLY AND SANITARY MATTERS.

UCKFIELD WATERWORKS.—The town of Uckfield has just been supplied with water in accordance with the scheme prepared by Mr. H. Bertram Nichols, C.E., of Grosvenor Chambers, Birmingham, the engineer retained by the water company, and the works have been carried out under Mr. Nichols's supervision. A well has been sunk, and a bore-hole carried down to a depth of 278ft., at which depth a copious supply of pure water was reached. The water rises in the well, which is of an artesian character, to within 7ft. of the surface, and is pumped into a covered service reservoir having a capacity of 250,000 gallons, sufficient for seven days' supply at the rate of 15 gallons per head. A petroleum engine (Spiel's patent) supplemented by wind power, raises the water. The wind-motor is of the "Halliday" pattern, and is carried up to a height of 90ft., the sails being 30ft. in diameter. These motors answer their purpose admirably, and under Mr. Nichols's advice great economy will be experienced in the annual working expenses, both gas and coal being expensive items in the district. The service reservoir is constructed of concrete, 6 to 1, the cement used in the work bearing an average tensile strain of 590lb. to the square inch. There is a good pressure throughout the town. The mains vary from 5in. to 3in. in diameter, supplied with all requisite sluice valves, hydrants, &c., in suitable positions, and in the aggregate measure about 2½ miles. The cost has been about £3,250, which is irrespective of land, Parliamentary and other charges. Mr. N. Monzier, of Birmingham, was the contractor for the well and bore-hole, and Messrs. W. Jenkins and Sons, of Leamington, were the contractors for the remainder of the works forming the main contract.

LEGAL INTELLIGENCE.

RE W. L. KELLAWAY.—The debtor, trading as a builder and contractor at Pentonville, has filed his petition, and a receiving order has been made. The liabilities, secured and unsecured, are estimated at about £50,000, the value of the assets not being ascertained.

CHIPS.

A marble tablet has been erected in Canterbury Cathedral to commemorate the bequest of the library of Archbishop Howley to the Dean and Chapter by the late Archdeacon Harrison.

A new Congregational Church was opened in Audley Range, Blackburn, on Friday. The church has been erected at a cost of £6,000, and will provide accommodation for 700 worshippers. It is Decorated Gothic in style.

The Ton schools for the Ystradyfodwg School Board are being warmed and ventilated by means of Shorland's patent Manchester grates, supplied by Mr. E. H. Shorland, of Manchester.

Walworth-road Baptist Chapel was reopened for divine service on Sunday morning last, after extensive alterations and repairs. These works have been executed by Messrs. Pitman and Son, of Newgate-street, E.C., under the direction of Mr. J. E. Sears, F.R.I.B.A.

A *Salon* at Brussels, opened by the King and Queen of the Belgians on Tuesday, is more remarkable for the immense number of works hung than for any special merit in the exhibits. Among the portraits is one of a lady by Sir J. E. Millais.

The Paddington vestry voted, on Tuesday, £10 towards a fund for meeting the necessary expenses of promoting a Bill in Parliament for purchasing the water companies' undertakings in the Metropolis, or for power to set up a competing supply. The London County Council have no power to introduce such a Bill.

A new theatre is about to be provided for Dublin at a cost of about £60,000. It will be exactly opposite the Queen's Theatre in Great Brunswick-street. Mr. Dudgeon is the architect, and Messrs. Meade and Sons, of Dublin, are the contractors.

The foundation-stone of a new church at Penarth, to be called All Saints, was laid on Monday by Lady Windsor. The new church will be erected from designs by Mr. J. Coates Carter, of the firm of Seddon and Carter, diocesan architects, Cardiff. The cost is estimated at £6,000. The church will be Early English in style, and will consist of a chancel, nave with north and south aisles, organ-chamber, and vestry. Mr. Purnell, of Penarth, is the contractor.

For the construction of a dock on the banks of the Grand Junction Canal at Kensal-road, the Vestry of Kensington have accepted the tender of Messrs. Nowell and Robson at £8,250.

Mr. Geo. S. Horton, surveyor to the Market Bosworth rural sanitary authority, has been appointed surveyor to the Felixstowe and Walton local board.

Our Office Table.

THE injury occasioned by the disastrous fire which occurred on Monday night in the Palace of the Alhambra, at Granada, the most magnificent relic of Saracenic architecture in Spain, was less extensive than was at first feared; but the magnificent Court of the Myrtles and the right wing of the Arrayanes Court are totally destroyed. The fire, which is suspected to have been caused by an incendiary, broke out in the Court of Alberça, which is situated close to the famous Court of the Lions and the Queen's Dressing-room. One side of the Court of the Myrtles is overlooked by the Tower of Comares, which contains the Hall of the Ambassadors, the finest and largest apartment in the Alhambra; but it is hoped that this has escaped serious damage. We gave views of the interior of the Lions' Court and an entrance to one of the pavilions in our issue of Dec. 14, 1888, together with a general description of the palace, which is not only the most magnificent relic of Saracenic architecture in the Peninsula, but the summit of perfection of all Moorish art.

IT is frequently assumed that Mediæval builders were the first to display indifference to the charms of older work by constructing their additions in marked contrast to the style observed in the existing masonry, and in utilising as common building material carved stones of previous generations. The Rev. Robert S. Baker, F.S.A., the rector of Hargrave, reminds us that the Romans were equally careless as to the preservation of ancient buildings and the maintenance of historical records in stone. In excavating the purely Roman site of Irchester, a walled camp and Roman town near Wellingborough, in 1878, Mr. Baker found foundations of later Roman houses overlying earlier ones, and crossing them at all angles—sometimes three deep. In one later foundation a mutilated stone deity lay prostrate, as a mere building stone, clearly pointing to the last hundred years of Roman rule, when the gods had to make way for Jesus of Nazareth. Similarly, he remembers the veteran town clerk of Newcastle, the late John Clayton, pointing out an altar of Jupiter, built in to form a corner-stone in one of the camps of the Roman Wall.

THE site for the Royal Naval Exhibition, to be held next summer, has been very prudently changed from the grounds of Greenwich Hospital to those of Chelsea Hospital, now occupied by the Military Exhibition. Already the guarantee fund exceeds £30,000, and there is every probability that an interesting and successful Exhibition will be organised. The committee are making an appeal to all who may possess any works of art, relics, momentoes, or trophies connected with naval history or illustrative of naval warfare which may be in the possession of private persons or in public collections, and they desire all who may possess such articles to communicate with the honorary secretary, Captain Jephson, R.N., at the offices of the Exhibition, 6, Craig's-court, S.W.

THE Vestry of Paddington have discussed at great length the question of the erection of sky signs in the district, the matter coming before them in consequence of the addition of a "huge advertising structure" to the roof of the Lord Elgin Hotel, in Elgin Avenue, Edgware-road. A resolution was moved by Mr. Mark H. Judge, stating that in the opinion of the vestry the roof and walls of the hotel named were not a suitable foundation for such a framework, and informing the district surveyor that the vestry consider the structure a dangerous one within the meaning of the Metropolitan Building Act of 1855. The resolution was, however, rejected, and a modified one, simply declaring that "the structure was most objectionable," was carried. A copy was ordered to be forwarded to the London County Council, with a request that that body would at once frame by-laws for the purpose of controlling the erection of such structures on the roofs of houses, "seeing that the rules of the Metropolitan Building Act, 1855, do not apply, and that the Council are empowered by that Act to make by-laws to meet the cases of 'any iron building or other building to which the rules of this Act are inapplicable.'"

THE directors of the Bath Stone Firms (Limited) announce in their fifth half-yearly report that they have become the sole agents in Great Britain and Ireland for the sale and use of the process introduced by Messrs. Faure, Kessler, and Co., of Clermont-Ferrand, for hardening and preserving stone. The process, which is known as "Fluate," consists of applying to the surface of the stone a solution made by dissolving in ordinary water certain chemical crystals. The cost of the solution is, the directors state, but trifling, and the labour in applying it to the stone is as simple and cheap as whitewashing. The process does not affect the colour or alter the granular appearance of the stone. It sets up a chemical action, which transmutes the stone into a substance practically imperishable. As the adoption of this invention in this country will in many cases lead to the use of Bath stone in lieu of hard and expensive stones and other costly materials, the directors have evidently secured what will prove a not unimportant auxiliary to the company's business.

A REVOLVING door, rolling up upon a spindle when not in use, has just been patented in the United States by an architect living at Worcester, Mass. The door is an adaptation of the principle of the roller-top desk and cover, and consists of a series of slats, each about 1½in. wide and ¾in. thick, joined together by wooden spindles, one revolving within another. In the roller-top desk the slats are joined by ribbons of steel or canvas. When the door is opened it is wound up on a spiral drum at top and bottom, and all is inclosed within the door casing. An ordinary 3ft. door winds up in a roll. 7in. in diameter. A wire or cord or steel ribbon (as the case may be) runs from the outer edge of the door at top and bottom, and is wound upon a spiral drum in the casing opposite the side in which the door itself is wound up.

THE mining department of the United States Geological Survey has issued a special report on the production of slate last year. It is the first of this kind published, and shows the value of the slate produced, the number of men employed, the wages, the capital in the industry, and other details. The total value of the slate produced in 1889 was 3,444,863dol., of which 2,775,271dol. represented the value of the roofing slate to the amount of 828,990 squares. This is nearly twice the amount produced in 1880. At present twelve States produce slate; but a line drawn from Maine to Georgia, and approximately following the coast outline, would pass through all the important slate-producing localities. Pennsylvania, Vermont, Maine, New York, Maryland, and Virginia are, in order, the most productive. In Georgia, Michigan, and New Jersey the amount and value are small; and quite recently quarrying has been commenced in Arkansas, California, and Utah. Discoveries of slate under promising conditions have been made in other States, chiefly in Tennessee. The quarrymen all over the country, as well as the owners of the quarries, are either Welsh or of Welsh descent, and many of them have been trained in the Welsh quarries.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY.—Glasgow Architectural Association. "Ravenna, and other Italian Towns," by William Leiper. 8 p.m.

CHIPS.

A new Primitive Methodist chapel is being built at Doncaster, from plans by Mr. J. Simmons, of that town, at a cost of £1,200. Messrs. C. Sparkes and Son are the contractors.

The name of Charles Glass, of Cardiff, builder, appears in Tuesday's list of adjudications in bankruptcy.

The Local Board of Moss Side, near Manchester, has raised the salary of Mr. Acton, the surveyor, to £335 per annum.

The will of Mr. Henry Boyes (formerly of the firm of Boyes Brothers, merchants), late of 95, Ebury-street, and of Arundel House, Arundel-street, Strand, was proved on the 5th inst. by Mr. Henry Cowell Boyes, F.R.I.B.A., the nephew, the sole executor, the value of the personal estate exceeding £29,000. Besides a legacy of a third share of £10,000, the residuary real and personal estate is left to the said nephew, Henry Cowell Boyes.

New head premises for the Shipbuilders' and Boilermakers' Union have just been completed in Eslington-road, Jesmond, Newcastle-on-Tyne. The building is entirely of stone, and is surrounded by a stone wall and ornamental railing on all four sides. Besides a hall, committee-room, and clerks' rooms, a residence is provided for the secretary to the Union.

Trade News.

WAGES MOVEMENTS.

NORTHAMPTON.—The working plumbers, wh have been on strike for about two months, hav received a final reply from their employers refusin arbitration.

SHEFFIELD.—There is a strike of cabinet-make in Sheffield. The men ask 2s. a week advance, an increased rates of pay for overtime and Sunda work. The present rate of wages in Sheffield 35s. a week.

METROPOLITAN SLATERS AND TILERS.—A well attended public meeting of London journeyme slaters and tilers was held on Tuesday evening a the Three Kings, Clerkenwell, for the purpose o organising the trade. Mr. Daniel Shaw presided Mr. J. Davey and others addressed the meeting and a resolution was passed pledging those presen to join the Union.

Holloway's Pills improve the appetite, strengthe the digestion, regulate the liver, and act as gentle aperients. The pills are suited to all ages, and their inventor's fame has resounde through all the quarters of the globe. Wherever sickness exists, th medicine has made its way to be everywhere and justly appreciated.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

ARKLEY, HIGH BARNET.—For alterations to Eastwood, for Mrs. Barnes. Mr. H. A. Gregg, A.R.I.B.A., 1a, St. Helen's-place, E.C., architect:—
James, Barnet (accepted) £330 0 0

Fig. 1. Façade principale

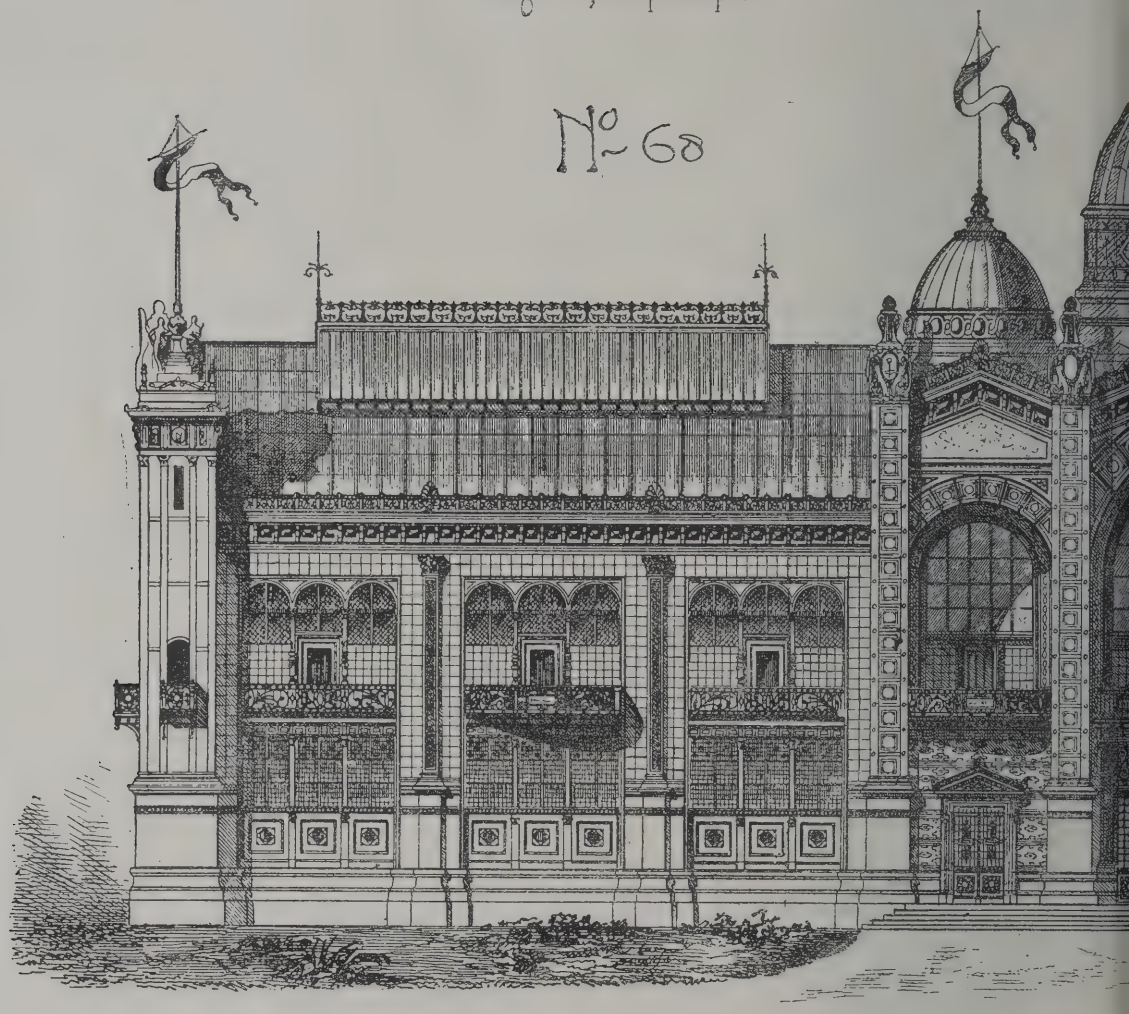
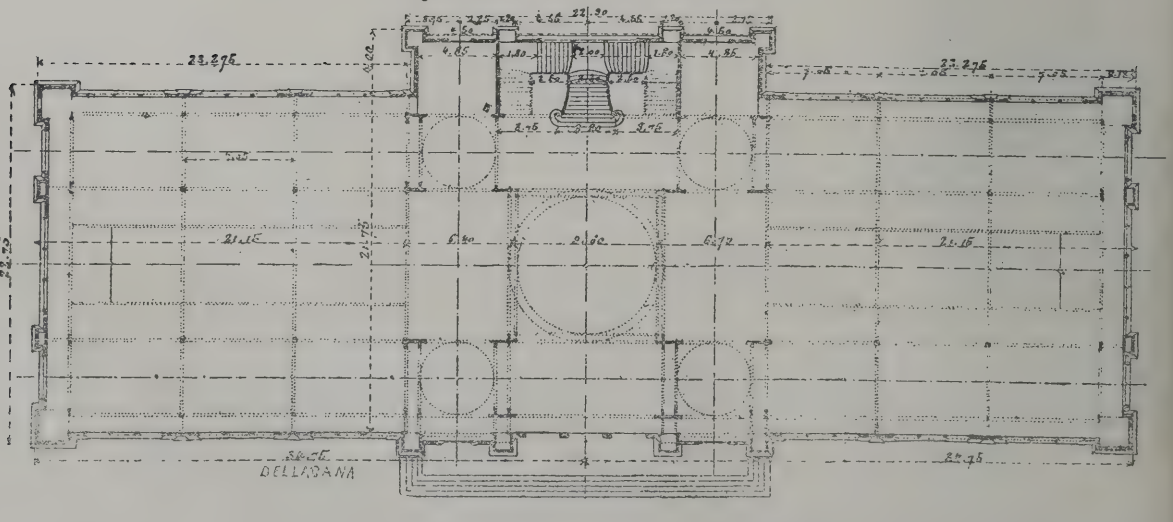


Fig. 2. Plan du Rez-de-Chaussée.



PAVILLON DE LA REPUBLIQUE ARGENTINE

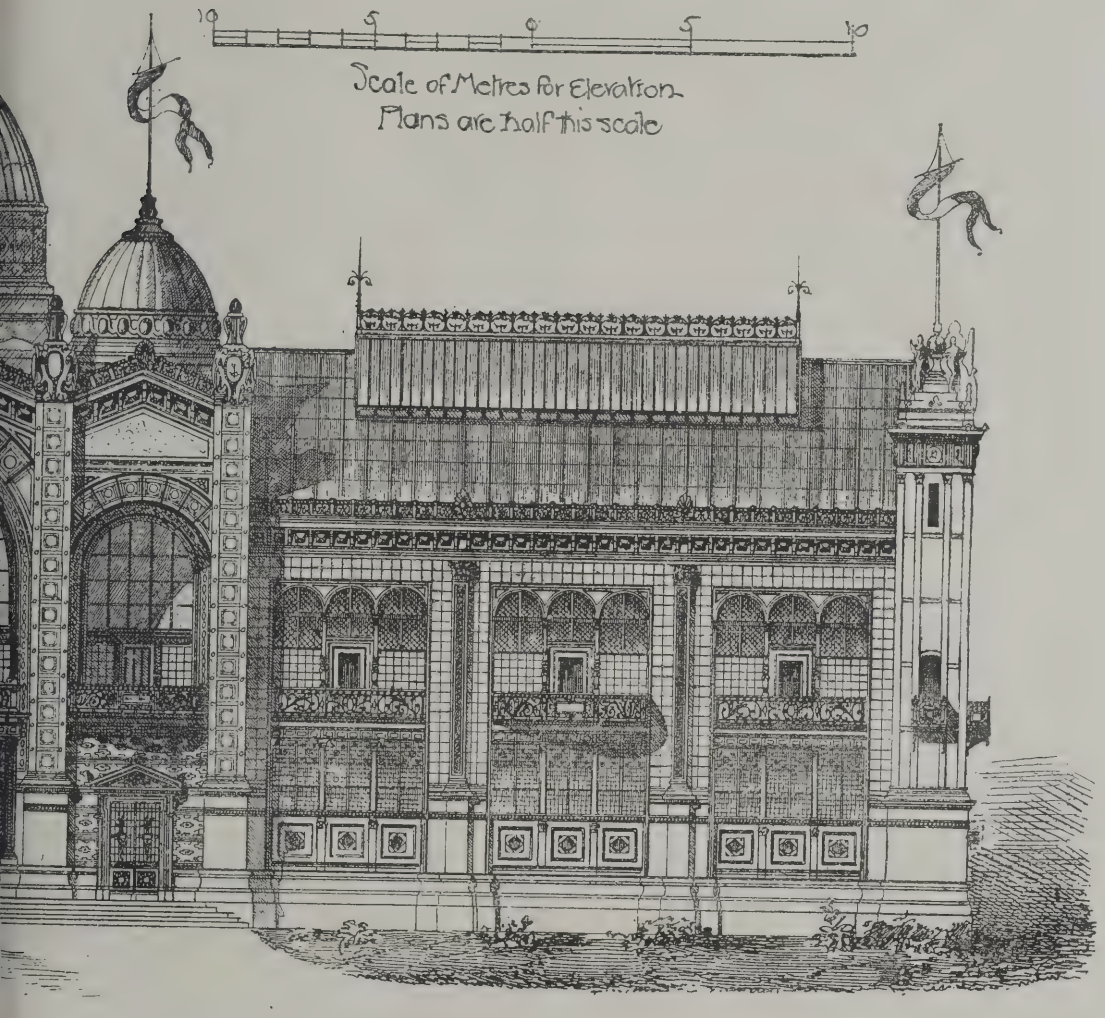
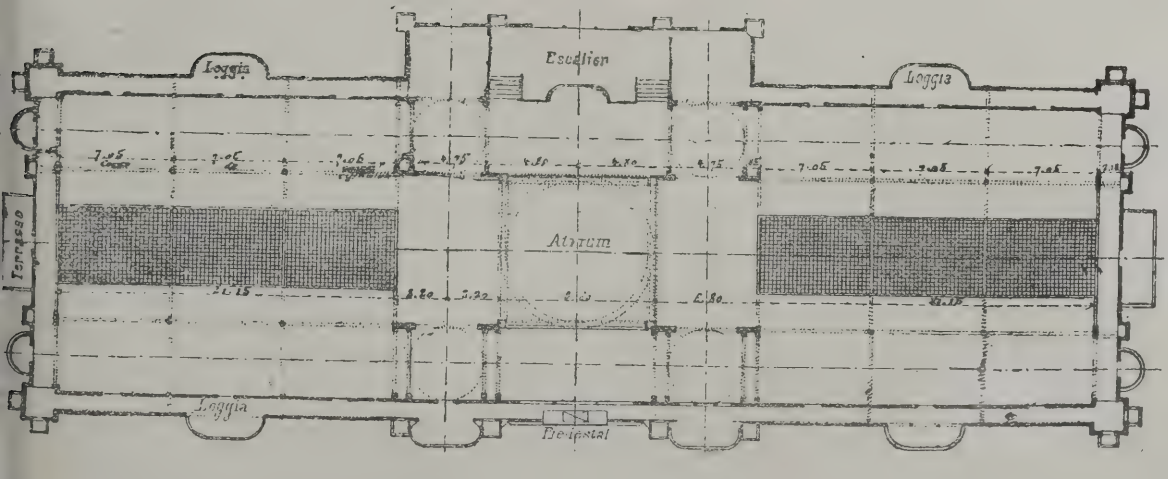
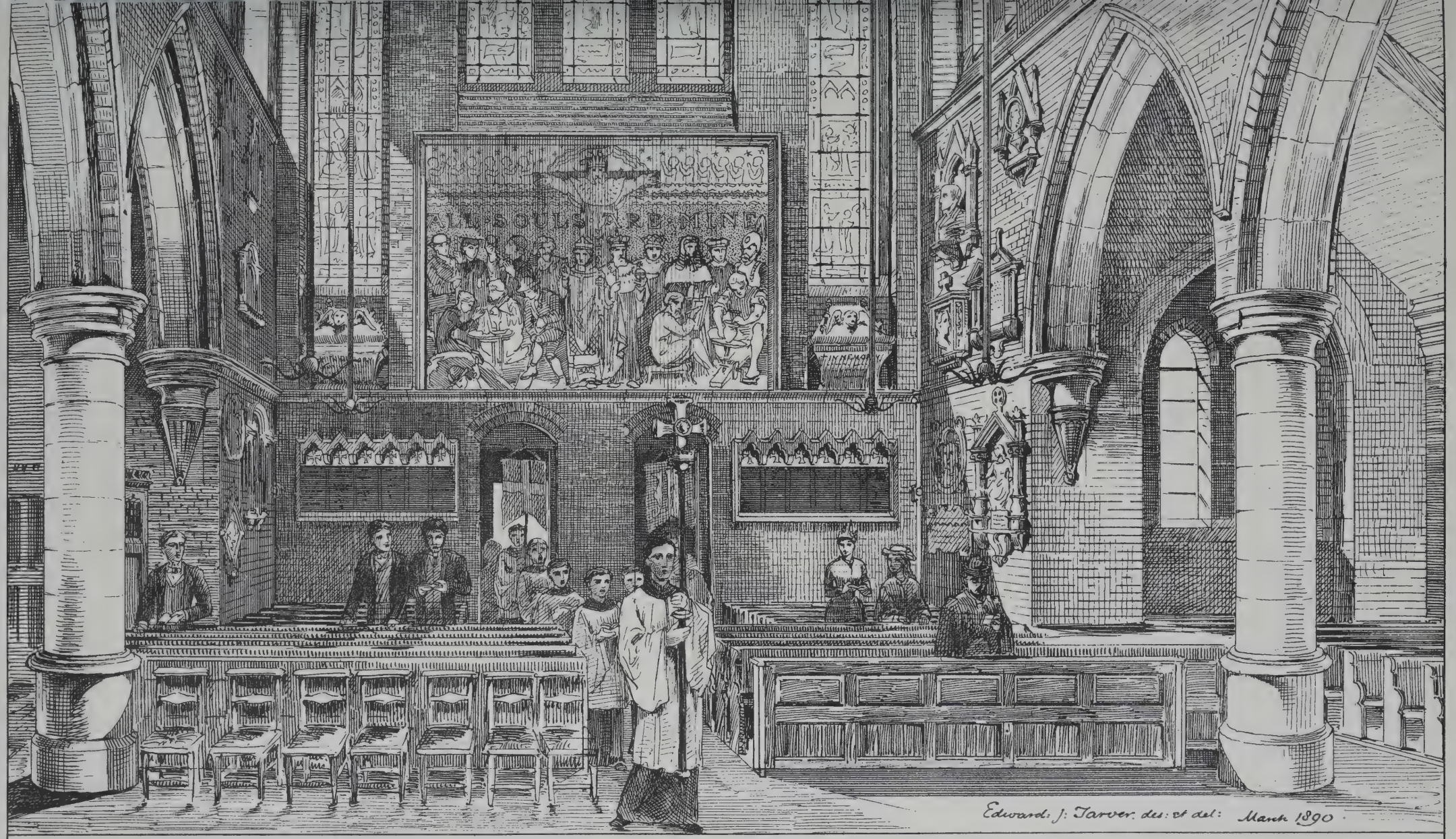


Fig. 3.—Plan du 1er Etage







CHURCH · OF · ALL · SOULS : HARLESDEN · MIDDLESEX ·

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Bakewell Town Hall

Geo. E. Statham Architect
Nottingham & Matlock

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The Whitworth Memorial Hospital Darley Dale 1890
J. W. & F. R. Beaumont Architects

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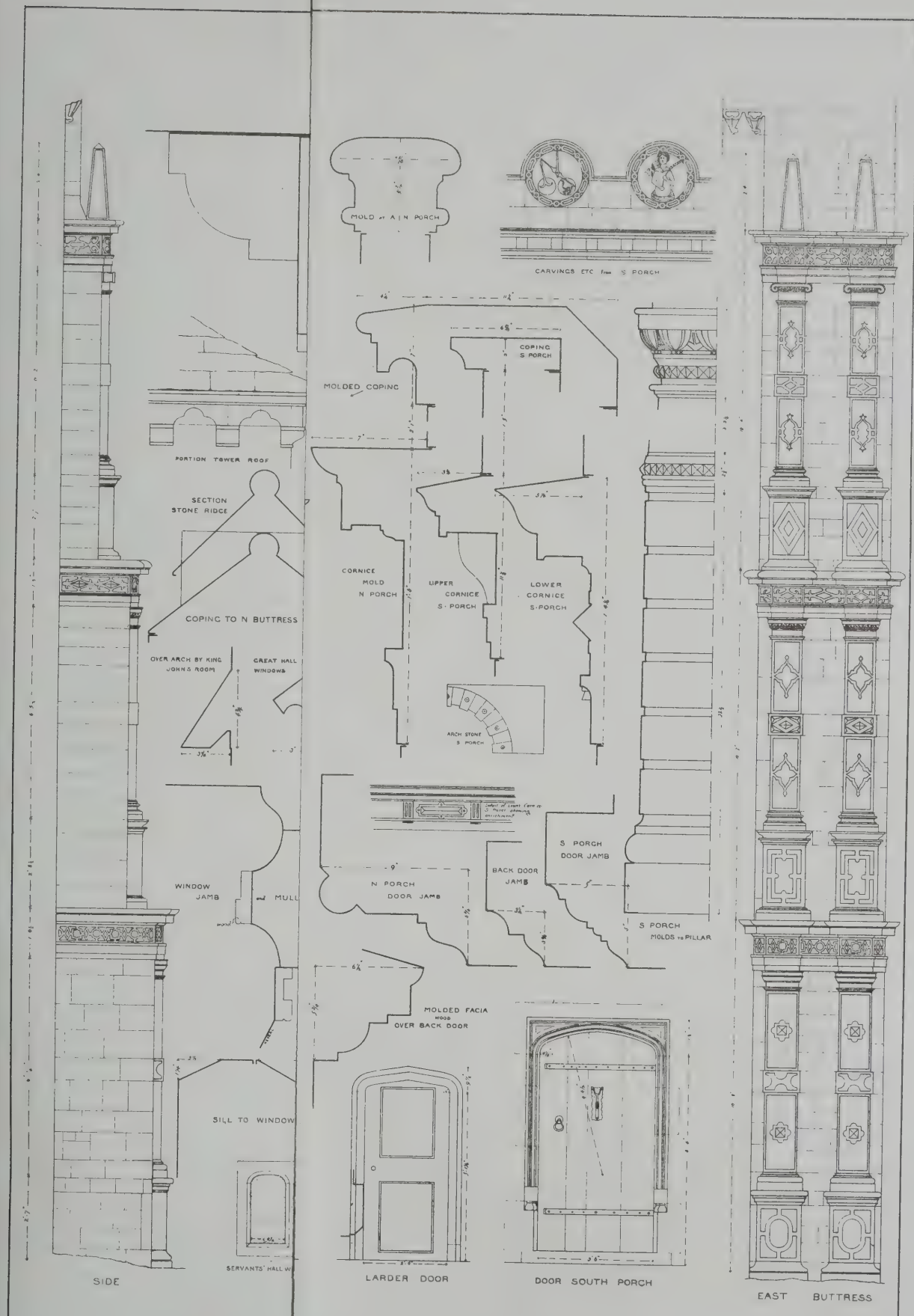
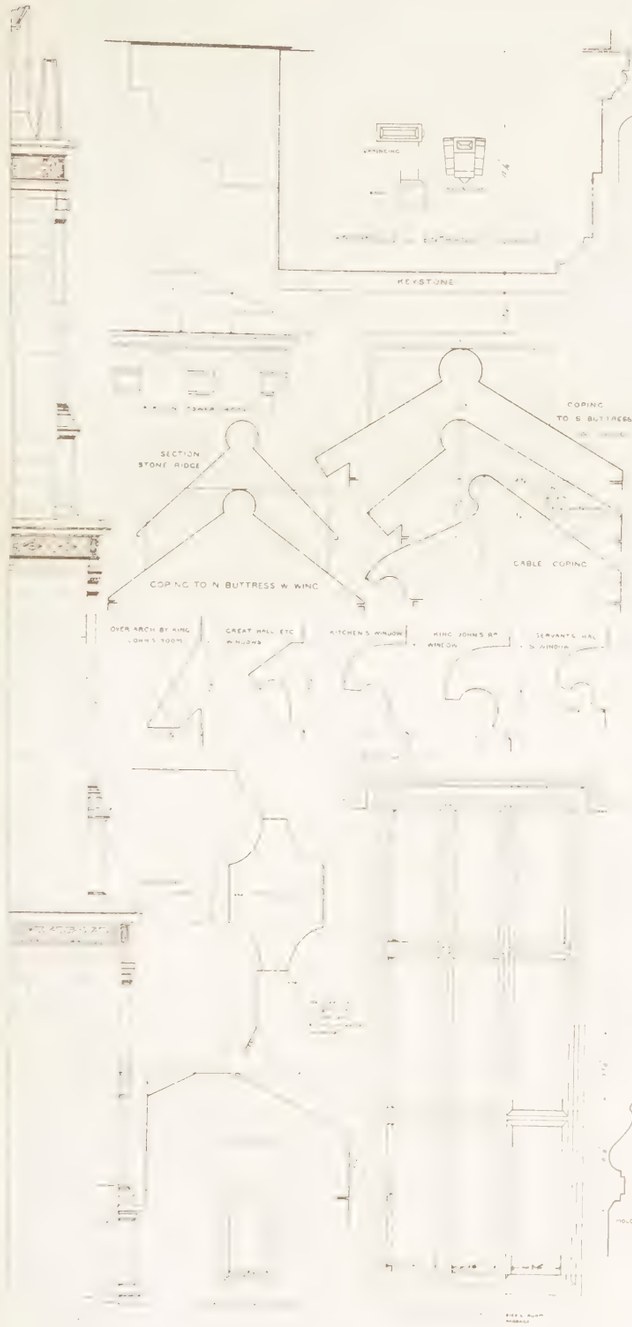


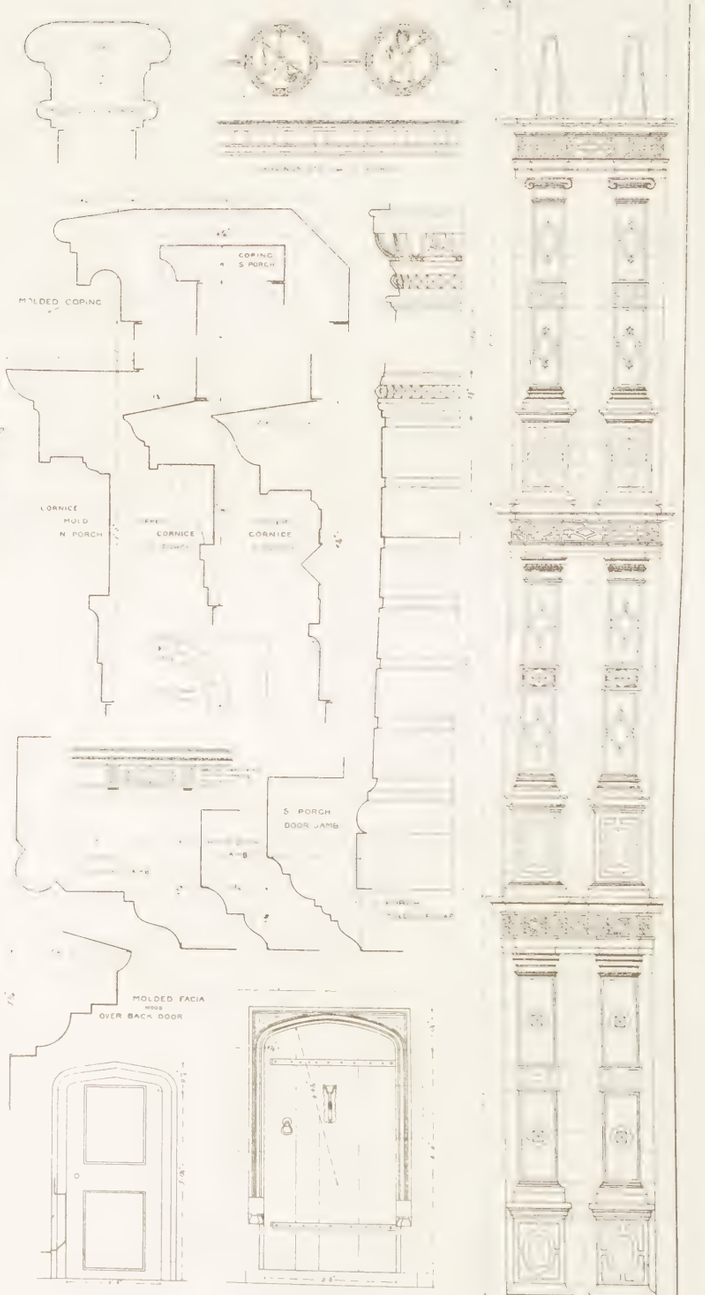
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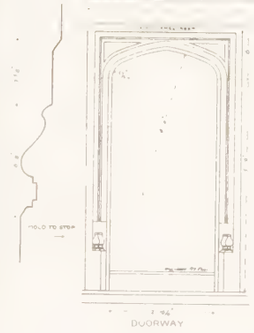
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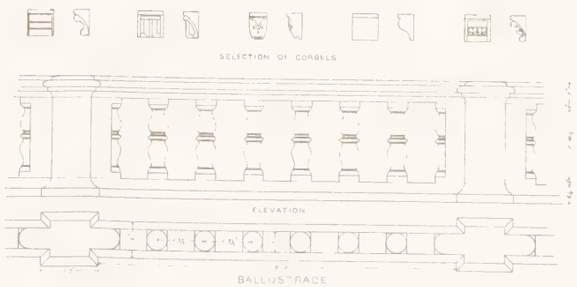




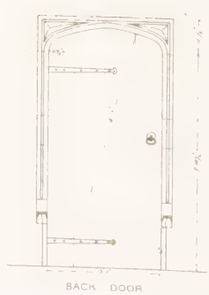
NORTH PORCH




DOORWAY



BALLUSTRADE


BACK DOOR

LARDER DOOR

DOOR SOUTH PORCH

EAST BUTTRESS

R.I.B.A. MEDAL DRAWINGS FOR MEASURED WORK BY J.E. MOWLEM

Photo lithographed & Printed by James Akerman, 6, Queen Square, W.C.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LIX.—No. 1864.
FRIDAY, SEPTEMBER 26, 1890.

THE GROUNDWORK OF BUILDINGS.

IF architects looked a little beyond their drawing-paper to the actual surroundings of the site and the locality, they might do a great deal to make their art more attractive to the bulk of most people who care to look at buildings either from the outside or within. A popular preacher once argued in the same way about preaching: he thought it would be better to look beyond the sermon to try and "win souls," and it is quite evident that the same advice would be more usefully followed if every design for a building could be made to win the eye of the spectator by a study of the surrounding site, and the adaptation of the building to it. Isolation and the want of sympathy with site are obvious defects in many of the buildings erected nowadays. The design has been studied on paper: it may possess good outline and details, but appears out of place with the site or scenery when built—either too town-like and formal, or too rural and irregular. A spick and span new red-brick villa looks as if it had been transplanted to its site from the builder's yard, for it neither harmonises with the scenery nor fits the ground upon which it stands. It looks out of joint with everything near it. Hampstead, Wimbledon, and many of the newly-formed western suburbs near London, afford us examples of the architect's fancy design conceived and completed on the drawing-board. No affinity is to be found between the design and the situation. In one place a ridge or hill-side is occupied by a row of level-ridged houses suitable for a street, or a few isolated villas that look as if they had been plucked from a terrace at Kilburn or Kensington. A declivitous hill, instead of having a few detached houses well broken in outline and surrounded by foliage, may be seen rigidly marked by lines of step-like buildings. The hills of Hampstead and Croydon are spoilt by designs of this description; and we meet with this unsightly mode of building more conspicuously on the undulating hills and downs round Preston and the north of Brighton. On flat ground the value of a good sky-line is quite as evident, but the straight, level-roofed terrace, or street, ostentatiously offensive. No doubt we shall be told these are faults which the architect cannot avert; he has seldom any choice in the planning of estates, and is obliged to follow suit; the speculative builder and the landowner together arrange the class of house required for a particular locality. Not always. Detached residences are to be found on all good estates, and the architect is generally his own master in determining the style of building, and it is in respect of these larger structures that we now write. They dot about nearly all our well-wooded localities, and spring up on cliff and chine in our fashionable watering places, such as Bournemouth, Southsea, Eastbourne, and Westgate. The designs of these buildings have all the appearance of having been selected at random from a stock collection: Gothic from 13th Century to Tudor, Stuart, and Queen Anne, half-timber, brick and parget, Italian Renaissance, Flemish, *et hoc genus omne*, are tried by the complacent designer to gratify a whim of his employer or his own. Each arrests the eye by its self-assertion of independence; each is strongly dissonant with everything around it. The design is made on paper, perhaps in London, Paris or a hundred miles away from the locality. The educated taste at once perceives a want of sympathy between the building and its surroundings; the house impresses only by its singularity and its want of harmony with the situation.

And the first thing which makes itself felt in modern architecture is a certain kind of abruptness. The ordinary observer likes to find some sort of agreement between his own sense of what is right and the executed building, but he sees very little that he can understand or appreciate. He cannot, for instance, perceive why an elaborated Italian or florid Gothic building should be placed on a rugged cliff when all beside it is barren and wild, and he can only compare such a building to a dressed-up dandy of the West End on a lonesome moor or in a country lane. One of the most neglected studies of the architect is the groundwork or base of his buildings. Very seldom do we find him attempt anything more than to make a plan of the approaches or to take a few levels for foundations. The consequence is that the building appears to start abruptly from the ground without any sort of preparation; if flat, nothing is done to raise the ground on which the structure stands, and therefore, if the addition is made afterwards, the building is sunk in a depression or it appears half-buried from the roadway. A perfectly flat or level plot unrelieved by foliage is what is often seen in the outskirts of our towns, and from this dreary flat springs a very ornate structure. The building looks as if it were there by accident; no effort of art has been expended to form a platform or base for it. The unbroken flatness of the ground and the ornamental or irregular features of the building produce a most abrupt effect on the eye of the spectator. Turn from this sort of situation to the slope of a hill or declivitous land descending to the sea. We find the same want of study to make the structure suit the ground. In the first place, the plan of the building has not been disposed in reference to the fall of ground; a long front is placed lengthwise with the declivity, creating unnecessary foundations and earthwork; it has a level roof which causes one end to be considerably higher than the other. A study of the whole site and building in pencil would have suggested, instead of a long parallelogram, a block plan broken into wings or return ends, to prevent unnecessary excavations and to reduce the length on the declivity; or the long front, if necessary, could be stepped down by adopting an irregular sky-line. In either of the cases we have imagined the platform or the terrace is a very essential preparation, as it forms a kind of substructure, leading the eye from the natural level to the building itself. We have a few good instances of this sort of design at Chatsworth, Hatfield, Wollaton, Blenheim, Castle Howard, in which the groundwork has been studied in connection with the building. The forms of terrace walls ought to be made a special part of the architectural design. The architect should first select his site and aspect, then take the necessary levels for the ground formation. He may have a walled terrace parallel with the building front, constituting a base, either surmounted by a balustrade or left plain. From this level flights of steps may conduct to a lower plane or second terrace, with its formal laying out of beds and plantation, thence to a third or natural level of the grounds. Each terrace is an architectural boundary, bringing down and extending the lines of the structure giving the building a foundation and a base In flat situations a single terrace may suffice; but for steep declivities three or more are required, and these should be varied in form to suit the contour of the ground.

At the seaside, the terrace is absolutely essential to give a base to the buildings which occupy the rising ground towards the sea. At Eastbourne, for example, much has been done to give breadth of base and form the parades, by cutting the natural escarpment into two or three level shelves or promenades, and constructing concrete retaining walls between the roadways. The marine promenades from the pier to beyond the Wish Tower form a succession of terraces which might have been rendered still more attractive at a little cost. Yet as they are, they become handsome additions to the attractions of this fashionable Sussex watering place. The escarpment has been successfully relieved by evergreen shrubs, and by steps and inclines to give access to the higher levels. The houses are still further embanked and planted on the summit. The chalk hill facing the sea front, which gradually slopes away towards the abrupt hill on the west, is thus converted into two artificial escarpments and roads partaking of the curvature of the hill. At Scarborough, the South Cliff presents an even grander example of a natural escarpment. The Grand Hotel, the Spa, and the Promenade extending southward have been constructed upon and out of this great frontage of rocks. Plantations and terraces cut out of the rock give Scarborough a charm of its own. The Spa Saloon, with its front terrace, is unique as an example of marine architecture at the base of a great hill. Again, the Valley Bridge (uniting the old and new towns) and the Spa Bridge (connecting St. Nicholas Cliff and the Grand Hotel with the Spa) are valuable adjuncts. Hastings and Brighton both present examples of the terrace—the latter town has indeed, at the Kemp Town end, a noble terrace or marine parade with its esplanade below, while on the new western side, terraces and lawns have been formed which surpass in their breadth and spaciousness those of other sea-fronts. It is to the architectural advantages offered by these artificial works we now allude. On the cliff or hillside the terrace is absolutely necessary to give base and to form a kind of transitional step between the ground and the building; on the flatter situation the terraced platform helps to break the angle between the horizontal and vertical lines. In both the steep declivity and the plateau, the level platform, with its balustrades and artificial embankments, lead the eye from the natural surroundings to the architect's work. Why should he not make this artificial outwork a feature in his design, and consider it as necessary a portion of it as the foundations themselves? Till the architect can divest his mind of the notion that his design merely pertains to the structure *per se*, and conceives it to be his duty to extend his study to the groundwork and surroundings of his buildings, we shall continue to see the abrupt and unsympathetic vagaries which mar our best situations. Contented to work *in nubibus*, many imagine they can "drop down" a design anywhere.

THE EMPLOYMENT OF BUILDERS.

THAT the builder encroaches largely on the domain of the architect is too obvious to admit of any doubt, and is now and again an unpleasant reflection among many in the profession. A very considerable number of the buildings erected are planned and carried out by builders, and, as a correspondent reminded us in a letter last week, they do a great amount of work in alterations. We cannot disguise the thought that this state of things is not what it should be, nor that a great deal of this preference is owing partly to the architects themselves. But whatever may be the cause of this seeming declension of the public for professional advice and design, it is very unfortunate in result. Hundreds of acres of park-land are covered by buildings every year, the larger portion of them by builders single-handed, and the consequence is a very inferior class of buildings is erected, that

cannot but have an injurious effect on the taste of the public. We do not affirm that builders' architecture must be inferior—far from it, for we have seen some notable exceptions; but we do say that the indiscriminate employment of builders without professional advice is detrimental to the interests of both classes, and cannot fail to be disappointing to the employers.

There are two reasons why the labours of the architect are dispensed with which may be worth the consideration of the profession. The first is the desire not to add to the expenditure; the second the employer's wish to carry out his own views. Unfortunately, some employers' experience of architects is not very favourable, and the public entertain a strong idea that an architect's services are expensive and unnecessary. Until the profession does its best to remove this apprehension we are afraid that the builder's services will be deemed above their real value, and their own will be underrated. When an employer finds that a considerable percentage above the contract sum has to be paid in the shape of "extras," and that his architect has exceeded his instructions, he has a fair ground for assuming that professional aid is expensive; but this conclusion may be considerably aggravated should he discover serious defects in the building, scamped workmanship, and inferior materials. There have been, unfortunately for the profession, too many instances of such experience with which people are familiar. To these the builder can point. Irreparable injury has been done to the profession by these cases; the injury has not fallen on those who were really the defaulters, but has been shared by the whole body of which they are members. Have we not, on this ground, a strong argument for the *statutory* registration of architects?

Of course, in extenuation of these capital charges against the architect it may be argued that when he is employed he is to a certain extent a free agent, and ought to be fully intrusted with the work; that if the building is more costly it is because more thought and artistic design have been expended on the work than would have been the case if only a builder had been employed. The employer is satisfied if he obtains a house or business premises that just suit him, though the building represents barely the expenditure on materials and labour, and does not profess to be more than a commonplace structure. He does not regard an extra expenditure of a hundred pounds or two as contributing anything to the efficiency or convenience of the building; he does not set any value on architectural design or skilful adaptation, and is therefore not disposed to pay for professional knowledge and taste. Such a view of professional services is both near-sighted and unfortunate; but is one that, in the eyes of commercial men, is justifiable. It is the penny-wise-and-pound-foolish policy. Builders prefer the readiest and most easy methods of building: they do not trouble to solve the problem of plan, or to find out the most scientific construction of a floor or a roof; still, their buildings may be practically sound and substantial. The desire to carry out one's own ideas is a strong one. As our correspondent says, the employer often thinks "he is more likely to get his own way without the assistance of an architect," and is conceited enough to think he knows a thing or two about building. To a person of this kind, the builder who is willing to execute the work at the least cost is the only desideratum. He is not required to trouble himself about the plan which has already been laid down, but simply to find materials and labour, and no doubt a man imbued with the superiority of his own ability and his own whims cannot do better than engage someone to carry them out. The employment of an architect implies the submission of the whole design to him, and no independent professional man would care to act under dictation. Therefore we see the reason why so many employers who wish to be their own architects prefer to employ builders. Let us look at the other side of the picture. The old adage that the man who is his own lawyer has a fool for his client applies with almost equal force to the employer who imagines he can do without an architect. Whatever supposed advantages he gains by carrying out his own plans are dearly purchased by inferior workmanship. How does he proceed? A rough and imperfect plan is drawn, probably by the builder's clerk or by a friend, the employer trusting to his own verbal instructions. The contractor gives a price which does not include certain things, and is a mere guess, and after the building is commenced a variety of requirements have to be met. The employer gives a fresh order and is mulcted by an extra; in this manner the work is proceeded with, till he finds to his cost and chagrin that five per cent. expended on a properly drawn set of plans and specification would have saved him more than the cost in expenditure and peace of mind. We have imagined no chimerical picture. The employer with "fads" of his own, who laughs at the notion of employing an architect, is generally mulcted in extras, if not in a law suit. Still there are hundreds of persons who, heedless of the dearly-bought experience of others, are willing to commence building in the same way. We can point to numberless instances of failure. The amateur architect is the most unteachable of all bigots, for he carries his commonsense notions to the length of denying even the existence of the art of building. We cannot repress the "faddist." The misfortune is that he represents a blind class, and one exceedingly large, and the small contracting builder makes a good thing out of him. We cannot wonder at the amount of bad building, or the summonses against builders for using inferior bricks and mortar, as long as the trade has nothing to unite it. Could the builders unite to frame a set of rules for their guidance in the acceptance of contract work, could they be induced not to undertake any work that was not clearly described in drawings and specifications prepared by an architect, or, at least, endorsed or signed by one, a better order of things would prevail. The builder should be brought to see that it is for his own interest that he has the necessary conditions for carrying out his own work; and the public to understand that they have no assurance of efficient building except it be performed under the supervision of a third and independent party.

THE HYDROPATHIC ESTABLISHMENT AND ITS BATHS.—XI.

By R. Owen Allsop, Architect.

(Author of "The Turkish Bath: its Design and Construction.")

IN the preceding articles* I have dealt with all the baths ordinarily to be found in the hydropathic establishment. The hydropathic practitioner is chiefly concerned with the application of water in a simple way, at varying temperatures and in varying manners, in conformity with the first principles of hydropathy. Cures such as inhalations and pulverisations, the Pine cure, and the Mont Dore cure, &c., belong more properly to the medical bath-house; but just as massage, electricity, the Aix-douche, &c., have crept into more or less general use in hydropathic bath-houses, so other and more novel modes of treatment are constantly being essayed. In describing a few of these, therefore, under the heading of the present series of articles, I may feel every justification, and in the worst event, perhaps, be merely anticipating the future. Moreover, in my introductory article, it will be remembered, I alluded to the intention to deal with medical baths and treatments over and above those strictly pertaining to the Water Cure.

THE INHALATION HALL.

The inhalation hall consists of a room or chamber wherein patients may sit and inhale, for specified times, certain vapours. It is a feature very commonly to be met with in bath-houses on the Continent, particularly at such places as possess natural thermal waters giving off vapour. In bathing resorts where the waters are not of a temperature sufficient to give off a natural vapour, a fine spray is produced by impinging small jets of water against some hard substance, such as a sheet of metal, and this spray, or pulverised water, floats about the inhalation hall. In the inhalation hall for the Pine cure, steam is passed through a receptacle containing a quantity of pine needles saturated with a pine essence, thus filling the air with a pleasant fragrance. Of the latter class of inhalation hall, a good example is to be found at Reichenhall; and at Aix-les-Bains and Marlioz, close by the latter town, are examples of halls wherein the naturally-medicated water is pulverised and floats about the room in the form of spray. Perhaps the largest building adapted for the purposes of inhalation is that at Kreuznach, on the Nahe, in Rhenish Prussia, where there is, at the public bathing establishment, a "vaporarium" or "inhalatorium," 200ft. long, wherein visitors can walk, stand, or sit whilst inhaling medicated air. By means of a steam-pump the condensed and saturated brine is forced, at a high pressure, into the hall, and is thus transformed into spray.

The inhalation of medicated vapours, and vapours of mineral waters, is naturally and perforce confined to such places as possess thermal springs and medicated waters. The inhalation of the volatile principles of the pine, however, is a treatment that may be carried out effectively in any place, and efficacious and pleasant as it is, well deserves the notice of the hydropathist.

THE PINE CURE,

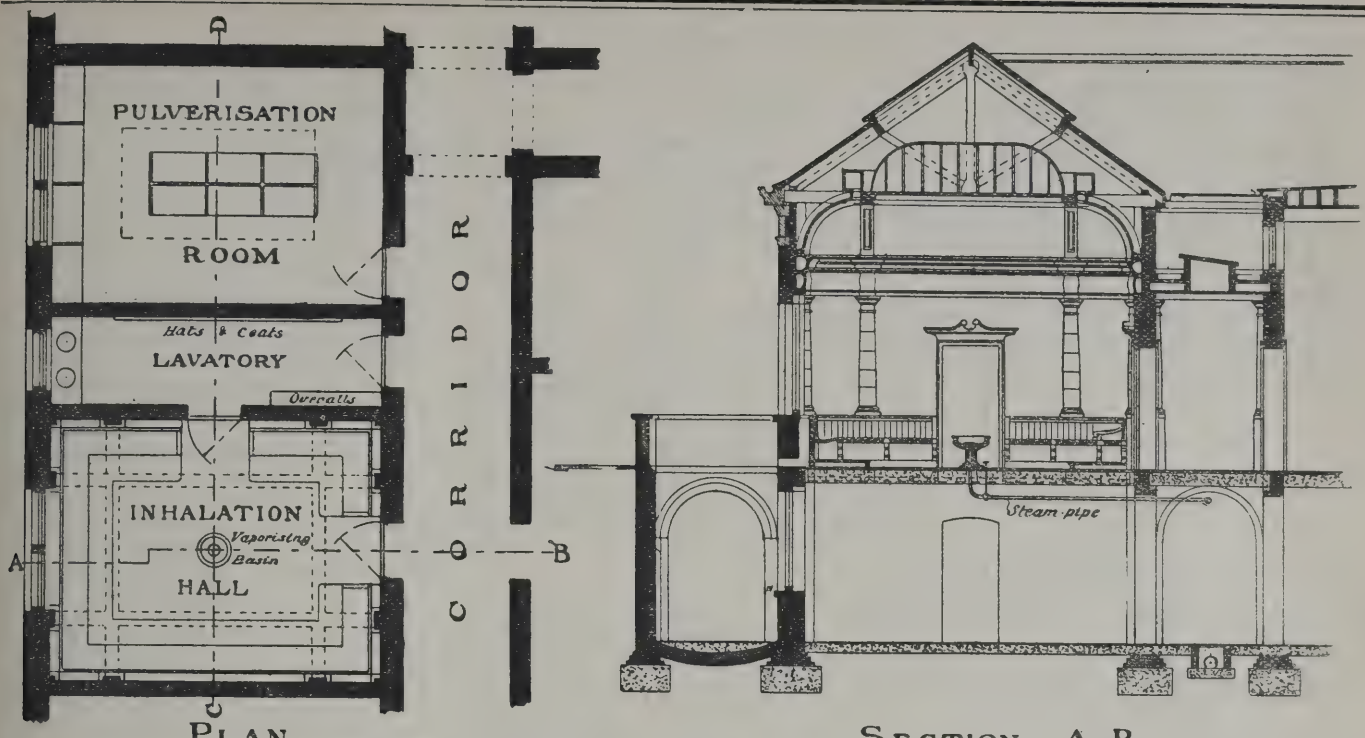
as it is called, has been for many years popular in Germany, and merits more attention in this country. Something, it is true, has already been done in this way. At Bournemouth, complete arrangements were made, when the elaborate baths at the Hotel Mont Dore* were erected, for the administration of the pine cure; and at Farnborough, in Hampshire, is an establishment specially devoted to this system of treatment. The arrangements made consist in the provision of various forms of baths of pine extract, and halls or rooms for the inhalation of the vaporised essential oil. The methods of treatment followed are more or less modelled on those in vogue at the Continental spas, of which that at Reichenhall may be taken as a type.

The pine selected for the preparation of the extracts and essences is that known as the pumilio pine (*Pinus pumilio*), the mountain pine, growing in large forests in the Alpine districts, nearest to the line of perpetual snow. At this high elevation the pines become mere shrubs, stunted and dwarfed; but it is from these small trees that the "needles" are gathered for the purpose of manufacturing the various commercial extracts, and the more refined essence called "Pumiline."

For the purposes of pine cure, all that is required are these commercial products, the coarser extracts for baths, and the refined pumiline for inhalations. It is thus open to

* Published in the Building News, 1889:—Sept. 13, Nov. 1, Nov. 15, Dec. 27; 1890:—Jan. 24, March 14, May 30, June 13, July 4, Aug. 29.

* For plan of these baths see "The Turkish Bath: its Design and Construction," published by E. and F. N. Spon, 125, Strand, London.

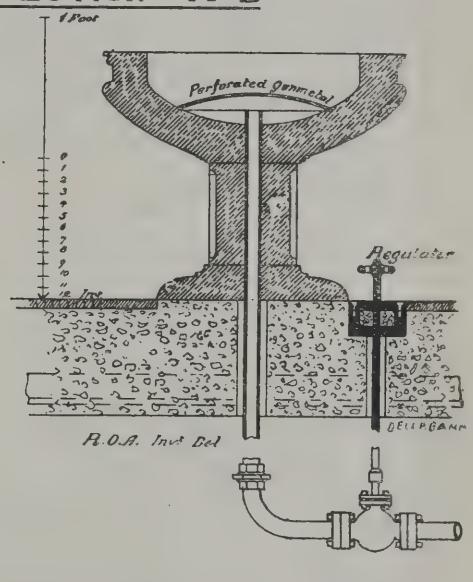


PLAN

SECTION: A-B



SECTION: C-D



VAPORISING BASIN

the proprietors of hydropathic establishments to avail themselves of the full benefit of pine cure, wheresoever they may be located. All that is required, when once the necessary arrangements are made for the baths and inhalations, are so many bottles of the manufactured extracts and essences. Considering the established repute of the pine cure for the treatment—by inhalations—of throat and chest complaints, which form so large a portion of ailments in these fog-girt islands, and—by baths—of rheumatic and cutaneous affections, it is much to be regretted that more attention has not been bestowed upon the erection of buildings for the especial purpose of a treatment which, besides being efficacious, is extremely pleasant to patients. This neglect is doubtless due solely to want of knowledge on the part of the proprietors of baths and hydropathic establishments, of the power for good of the pine cure, the simplicity with which it may be adapted to existing institutions, and the economy and small cost pertaining to its daily use.

The method of arranging and constructing an inhalation hall for the pine cure is shown in the accompanying illustrations, which also show the arrangement of a room for the Mont Dore cure—the application of pulverised water to the eye, ear, and nose—the detailed consideration of which, however, must be left to another article. Off a corridor in the bath-house is arranged a room, 18ft. 6in. long by 14ft. 10in. wide, with coved ceiling, and lighted, in addition to the end windows, with skylight over a domed curtain-light. Round the room are placed comfortable wooden seats, raised 6in. by means of a platform. In the centre of the room I have shown an improved form of vaporising basin, a device for vaporising the pumiline, and thus charging the atmosphere of the room with the volatile principles of the pumilio pine. It is constructed as follows:—In filling in the concrete between the iron joists of the floor, two round holes, respectively about 2in. and 3in. diameter, are left. Above the small hole, a circular cavity, 5in. diameter and 3in. deep, is left for a stuffing-box, to properly cut off the air of the basement. Over the larger hole, which should be in the centre of the room, is placed a marble or glazed earthenware fountain-like basin, having a steam-pipe 1in. in internal diameter passing through its centre. This pipe is connected below with the steam-supply pipe, with a screw-down regulating valve, the spindle of which passes through the smaller hole in the floor and the stuffing-box, and finishes with a hand-wheel above. Over the pipe passing through the basin and resting in an incision in the basin, is a circular, saucer-shaped disc of gun-metal, freely perforated with small holes. Upon the disc should be placed a layer of pine needles, and upon these a small quantity of pumiline or pine essence should be poured. Thus, when the steam is turned on by an attendant in the hall, the essence is vaporised by the hot steam, and the air of the inhalation-hall filled with a pleasant fragrance.

The ventilation of the hall, a point of evident importance, is effected by means of horizontal shafts round the curtain-light, whence the vitiated air and waste vapour is extracted by a general extraction shaft for the whole bath-house. The fresh air would be admitted from outside, as shown, behind the seats, and warmed when necessary by steam coils. An inhalation hall should be constructed of glazed ware, the present example being intended to be executed in faïence, and glazed bricks and tiles, including the coves and ribs of ceiling. The floor should be of a washable nature. Inhalation

halls should receive some attention from a decorative point of view, since patients must remain some time at each sitting.

Where, as in most cases, it is desirable to keep the air of the inhalation hall from penetrating into the corridors and other bath-rooms, a double-doored lobby, such as recommended to be placed between the hot rooms and cooling room of the Turkish bath should be employed. In the example given the lavatory would, in ordinary cases, be used as an ante-room, and thus serve the purposes of the lobby. A lavatory, as shown, is a useful adjunct, both for its own sake and as a cloak-room and place to keep linen overalls to wear during inhalations.

(*To be continued.*)

NOTES ON BUILDING PRICES.—X.

By John Leaning.

DIGGING.

THE valuation of excavation is comparatively simple in the case of the estimator of building values, as the work is all of a similar character. The digging for a building in London is frequently sub-let, despite the usual conditions prohibiting sub-contracts, and the cases are rare in which the general contractor can get it done as cheaply in any other way. The common practice is to contract with one man for excavation and carting (including general carting) and the supply of sand and ballast. The professional excavator has engines, cranes, and buckets which he brings on the work, and when a basement is required makes an inclined road to bring his carts down to that level. A common price for digging and carting in London is 3s. 3d. to 3s. 6d. When the builder does the work with his own men, the points for consideration are—

1st. The kind of labour available.
2nd. The degree of hardness of the ground.
3rd. The depth from general surface.
4th. The distance to deposit, and whether basketed, wheeled, or carted.

1st. The Kind of Labour available.—Digging can be done best and cheapest by the navvy who has been used to the kind of labour involved in the making of roads, canals, railways, or docks, and when there is a large quantity of digging it is policy to procure such; when the quantity is small, the builder contents himself with the work of the general labourer. A higher rate per hour than that for general labourer is frequently allowed in building accounts for labourers engaged in digging, but it is not always paid by contractors.

Sometimes the builder will let the digging only: it is obvious that the price must be, as a rule, less than the cost by other methods, or the builder would employ his own men. The men who take such sub-contracts work harder and for a longer time each day than those employed by the hour under ordinary conditions.

2nd. The Degree of Hardness of the Ground.—The estimator should satisfy himself of the nature of the ground by inquiring before pricing. When a building is pulled down, the men who do it leave the basement completely filled with building rubbish. This can be removed entirely with the shovel, although it is frequently measured by the quantity surveyor as digging, and included in the item Excavation to Basement. Such as this and other building rubbish requiring no getting is worth least of any. The classification of digging is simple, and may be reduced to four categories sufficient for all purposes.

A. Building rubbish, sand, loose soil, which requires no actual digging, only shovelling; of these a man will fill into a cart, or throw on to a stage or barrow about 22 yards per day of 10 hours. Instances have been known of a man throwing 25 yards per day. Cost at 6¼d. per hour, 2¾d. per yard cube. Constant ·045.

B. Vegetable soil, as in surface digging, dug with a shovel but not picked. A man will dig and fill into a barrow or cart 14 yards per day. Cost at 6¼d. per hour, 4½d. per yard cube. Constant ·07.

C. Clay, which can be dug with a shovel, but not necessarily picked, though sometimes picked for convenience, a man will dig and fill into a barrow, or throw up 6ft. Seven yards per day at 6¼d. per hour, 9d. per yard cube. Constant ·143.

D. In all the foregoing cases one man will do all the digging and filling or throwing. Hardest earth, clay, or gravel requiring picking, 6yds. at 6¼d. per hour, 10½d. per yard cube. Constant 1·67.

When picking is necessary, it is usual to have one man to pick and another to fill. The constant to be applied would be the sum of the constants for each man's labour.

Taking as an instance Mr. Hurst's constants for the excavation of clay, we have—

Excavating only per cubic yard	·100
Throwing with a shovel to a height of 5 feet, per cubic yard.	·055
	·155 = 6·45 yards per day.

Digging to Trenches.—Add to the foregoing prices 20 per cent. for work in trenches.

3rd. The Depth from General Surface.—Additional Throws.—The height of throwing is limited to 6ft. Each additional throw, including staging, 22 yards per day. Cost at 6¼d. per hour 2¾d. per cubic yard. Constant 0·45; staging about 1d.; total 3¾d.

4th. The Distance of Deposit.—Wheeling.—A run is assumed to be 20yds., but in the ordinary operations of the builder where the distance is only two or three runs, the wheeler will do it in one stage, using two barrows; one which he wheels, the other which he leaves to be filled during the time spent in going to the deposit and back, a third barrow and a second digger being used when one is not sufficient to keep the wheeler going. In cases of great excavations and longer distances, a more complicated arrangement is necessary. The runs must be carefully planned and the distances apportioned for the wheelers. The number of barrows for each shoveller is always one more than the number of wheelers. Plans of various barrow-runs are to be found in Seddon's "Builders' Work."

A filler will fill an ordinary barrow in the time a man takes to wheel it 33 yards, deposit the earth, and return with the barrow. A barrow holds one-tenth of a cubic yard. A man will wheel 20 yards, and deposit in a day of ten hours, about 35 cubic yards of earth. Cost at 6¼d. per hour, 1¾d. per cubic yard. Constant ·028. Additional runs, 1¾d.

Filling in and Ramming.—A man will fill in about 22 yards per day, and a rammer must attend on each filler. Cost at 6¼d. per hour each man, 5¾d. per cubic yard. Constant ·090.

Sometimes in a bill of quantities the excavation is all stated as "part filled in and rammed," or "a small part filled in and rammed." The earth returned should always be kept separate by the surveyor, and should appear in the bill as "earth filled in and rammed," or "dig, fill in, and ram." When it is not separated it must either be measured from the drawings or guessed at from the other items of the bill. The proportion will vary, and will rarely be less than five or more than 10 per cent. of the whole quantity.

Basketing.—Ordinary earth and clay per cubic yard would increase in digging about one-fourth, and as all earthwork is measured by the bulk before digging, we have just over 26 bushels per yard to dispose of. The basket holds about a bushel, but would be heaped. We may reckon, therefore, the usual 21 bushels as a yard. The case may be treated as analogous to filling barrows and wheeling. A wheelbarrow holds 1-10th of a yard, a basket about 1-21 of a yard (not quite half so much as a barrow). The difference is, however, enough to compensate for the lifting of the baskets, dealing with the distance as a run. The conveyance would take twice as long, two journeys instead of one. The filling the same as for wheelbarrows. Therefore the cost at 6¼d. per hour per cubic yard, of filling 2¾d. as before. The cost at 6¼d. per hour per cubic yard of basketing 3½d., equal twice wheeling; total, 6¼d.

Crane and Buckets.—The comparative cost of removing earth with and without machinery is arrived at in some such manner as the following. Every calculation of this kind will vary with the circumstances:—

	£	s.	d.
Cost of steam derrick crane with engine 4H.P. (nominal)	250	0	0
Cost of two iron skeps (1 yard)	18	0	0
	268	0	0
Cost of material of timber stage	15	0	0
Expenditure for wages, &c., erecting stage, hoisting, fixing, and removing engine	10	0	0
5 per cent. p.a. interest on capital £268 + £25 = £293 =	14	13	0
7½ per cent. p.a. for depreciation on £268	20	2	0
2½ do. do. on £15	0	7	6
Number of working hours per year, 2,587)	45	2	6

	Per hour	s.	d.
60lb. of coke per hour at 1s. per cwt. (15lb. per horse-power)		0	6½
54 gallons of water (135lb. per horse-power) at 1s. per 1,000 gallons		0	0¾
Engineer per hour		0	9
Three men filling skeps at 5¾d. per hour		1	5¼
Divided by yards per hour filled 7)		3	1½
Cost per yard 5¼d			

	s.	d.
Filling baskets and basketing per yard by previous calculations	0	6¼

The saving on the foregoing item is not great; it, however, illustrates the method of calculation. The difference of cost is more conspicuous in cases of digging deep trenches involving several throws, and the cost of unloading and depositing materials. Observe that the consumption of fuel will vary with the state of repair of the engine, and will be very much greater when it is out of order. On a very large work with deep trenches, temporary rails would be laid, and portable steam cranes used. There are a few general considerations which must be remembered in connection with earthwork. That work in trenches, post holes, wells, or cesspools will cost more than in large surfaces. Small quantities of digging will render it necessary to take a cart from place to place to make up a load at an additional expense. In the cartage of earth or other materials, a good schedule makes a distinction in the price thus:—"Add on the first load when not more than two loads are ordered to be removed on the same day." When earth is wheeled, small quantities differ but little in value for yard cube from larger ones.

Sometimes it is impossible to measure the earth of an excavation before digging; but a proportion can be deducted from the quantity of earth measured while loose after digging, as follows:—

	Increase of bulk.	Deduction
Earth and clay	¼th	⅕th
Sand and gravel	1/12th	1/13th
Chalk	⅓rd	¼th
Rock	½	⅓rd

Profit.—The author of a valuable series of papers on Estimating, which appeared in these columns, says: "A liberal profit shou d be added to excavating, as there must be a foreman on the site superintending this one trade, and the items are not large." The amount of an excavator's bill is generally small, but keeping the cost of foreman separate is to be preferred for the reasons before mentioned.

LARGE EARTHWORKS.

In estimating the cost of large earthworks, the proportion of getters, fillers, and wheelers requires careful consideration, and in any excavation the estimator must realise the method of doing the work before he can decide upon its cost. The "Dictionary of Architecture" says, under the heading "Earthwork":—"The French military engineers make a distinction between the various descriptions of earth, according to the number of men required to execute the description of work in them. (1) Ground easily moved is called earth of one man—terre à un homme. (2) Ground requiring two men, one to get and one to fill, is called earth of two men—terre à deux hommes. (3) Ground requiring three men, two to get and one to fill, is called earth of three men—terre à trois hommes."

There is a simplicity in this method of analysis which is, under some circumstances, most convenient. Rankine's "Civil Engineering" says:—

"The proportion of pickmen to the shovellers in a single rank depends upon the stiffness of the earth.

	Pickmen to one shoveller.
Loose sand and vegetable soil	0
Compact earth	½
Ordinary clay	½ to 1
Hard clay	1½ to 2

Earth is designated as "earth of one man" if one shoveller can keep one line of wheelers at work.

"Earth of a man and a half" if two shovellers and a pickman are need to keep two lines of wheelers at work. "Earth of two men" if one shoveller and one pickman can keep one line of wheelers at work, and, generally, "earth of so many men" according to the number of shovellers and pickmen together, who are required to keep one line of wheelers at work. Let m denote the number, l = horizontal distance the earth has to be wheeled, h = height of ascent if any, then the total number of shovellers, pickmen, and wheelers for each line of wheelers will be, approximately—

$$M = m + \frac{l + 6h}{\text{from 100ft. to 120ft.}}$$

This is most clearly put by Mr. Hurst. He says (Architectural Surveyors' Handbook): "As all ground has to be brought nearly to the same state before it can be filled into barrows or carts, the labour of filling may be assumed to be constant for earth of the same class, and the stiffness of the soil or difficulty of excavating it will affect only the number of getters required. Therefore, the proportion which the latter bear to the number of fillers determines the relative amount of labour required to excavate any particular soil. The unit to be adopted is the average quantity of earth which a man can fill into a cart or waggon per day of ten working hours."

"Let the number of fillers be represented by F, the number of getters by G, and the proportion which represents the labour as compared with that on earth which requires no getting by N.

$$\text{Then } N = \frac{F \times G}{F}$$

In this manner excavation can be described as earth of 1, 1½, 2 or more men, according to the difficulty in getting it. The French division of earth into three degrees of hardness, or four at most, is sufficient for all practical purposes."

Breaking Stone.—Breaking the larger stones in ballast for concrete requires little attention; but if insisted upon, a labourer could do thoroughly 30 yards in a day. Cost at 5¾d. per hour, nearly 2d. per cubic yard. Constant ·033.

The breaking of old bricks (sometimes used for concrete): a labourer would break into 2in. cubes about 4 yards per day of 10 hours. Cost at 5¾d. per hour, 1s. 2¼d. per cubic yard. Constant ·25.

Breaking Kentish rag or limestone. The stone in the sizes generally delivered for rubble walling: a labourer would break into 2in. cubes 2 yards per day of 10 hours. The stone measured after breaking. Cost at 5¾d. per hour, 2s. 4¾d. per cubic yard. Constant ·50.

In Boulnois' "Municipal Engineers' Handbook" we have the following:—"A good stone-breaker will break 2 cubic yards of hard limestone to the ordinary gauge (2½in.) in a day, and some men more. Hard silicious stone and igneous rocks can only be broken at the rate of 1½ or 1 yard per day. Guernsey granite a man can only break on an average half a cubic yard per day." River gravel, field stones, or flints, which are already of small size, can be broken at the rate of 4 or 5 yards per day.

In the construction of a building with rubble walls, the fragments produced by the dressing of the stone are available for concrete. For large works, where steam-power is convenient, Blake's stone-breaking machine may be used with advantage.

Screening Sand.—Sand is generally selected free from stones, and rarely requires to be screened for mortar-making. When it has large stones in it, screening is necessary. With a screen of the usual size of mesh, a labourer will screen 10 yards in a day of 10 hours. Cost at 5¾d. per hour, 5¾d. per cubic yard. Constant ·10. The sand and the screenings will both be usable, the latter for concrete and filling beneath pavings.

Washing Sand.—A man will wash a yard of sand (measured after washing) in three hours. The waste upon the original yard of sand will depend upon the proportion of loam or other soluble elements in it; commonly, a quarter of the original bulk is lost in the washing. The cost of a yard of washed sand would consequently be as follows, dependent, of course, upon the local value:—

	s.	d.	
1¼ yard of sand delivered (5s. 6d.)	6	10½	
Labourer, 3 hours (5¾d.)	1	5¼	
Cost per cubic yard	8	3¾	Constant ·30

Concrete.—The materials for concrete should be delivered as close as possible to their ultimate position, for, as before mentioned, it is the frequent handling of materials that increases the cost of the finished work.

The value of concrete depends upon—first, the amount of void in the aggregate which needs to be filled with the matrix; second, the diminution in bulk of the lime and sand, or cement and sand, as a result of mixing with water.

Stone broken into 2½in. cubes has voids	37	per cent.
,, ,, 2in. ,, ,,	40	,,
,, ,, 1½in. ,, ,,	42	,,
Clean shingle or burnt clay ,,	33	,,
Thames ballast ,,	15	,,

The diminution of sand and lime when made into mortar (matrix), is generally about one-fourth, more or less, and this may be adopted as a reasonable average. For cement and sand one-sixth may be taken as the average.

We may apply these facts to the calculation of the value of concrete in the following manner:

Taking water supplied in London by meter as 1s. per 1,000 gallons, we have less than ¼d. for a yard of concrete. Some water companies charge 1d. per yard of concrete: this is a reasonable average cost. Constant for mixing only, ·125 per cubic yard.

Example 1. Concrete composed of one part ground stone lime to six parts Thames ballast.

	£	s.	d.
6 yards of ballast (one-third sand) 4s. 6d.	1	7	0
25 per cent. on 9s. for diminution of 2 yards of sand in last		2	3
1 yard lime		11	0
Diminution of lime 25 per cent.			
Voids in ballast 15 per cent.			
Total 40 per cent on 11s. ..		4	4¾
	7) 2	4	7¾
		6	4½
Labour mixing (labourer 8 yards per day at 5¾d. per hour = per yard)			7¼
25 gallons water			1
Cost of 1 yard		7	0¾

The result of this calculation would have been the same if 17½ per cent. had been added to the cost of materials for waste.

Example 2.—Concrete composed of one-part Portland cement to six of Thames ballast; the cement 112lb. per bushel.

	£	s.	d.
6 yards of ballast, as before, at 4s. 6d.	1	7	0
16¾ per cent., ⅛th on 9s. for diminution of 2 yards of sand in last	0	1	6
21 bushels (21cwt.) of cement at 35s. per ton	1	16	9
Diminution of cement 16¾ per cent.			
Voids in ballast 15 ,, ,,			
31¾ ,, ,,			
say 32 on 36s. 9d.	0	11	9
	7) 3	17	0
	0	11	0
Labour mixing as last	0	0	7¼
Water as last	0	0	1
	0	11	8¼

Example 3.—Concrete composed of one-part Portland cement to six of broken limestone in 2in. cubes, and two parts sand (presumably in a stone district).

	s.	d.
27 cubic feet of rubble stone, delivered	2	6
Breaking—labourer, 5 hours at 5d.	2	1
9 cubic feet of sand = ¼-yard, at 5s.	1	8
4½ cubic feet = 3½ bushels, of cement at 1s. 9d.	6	1½
Difference between united bulk of cement and sand 50 per cent. and voids in stone 40 ,, ,,		
Difference 10		
Diminution of cement and sand in mixing 17 per cent.		
Deduct 10		
7 on 7s. 9½d.	0	6½
Labour	0	7¼
Water	0	1
	13	7¼

If the concrete is rammed, add 10 per cent. on the cost of ballast and lime, or ballast and cement, and labour per yard equal to earth ramming (see Ramming). The foregoing calculations are made on the assumption that the material is delivered close to the trench, and can be deposited by shovelling; if not, the cost of filling into barrows and wheeling must be added as follows:—

(See Filling) Filling into barrows	2¾d.
(See Wheeling) Wheeling	1¾
	4½

(General labourers at 5¾d. would do this.)

Rankine gives for *mixing* concrete, *wheeling*, and *depositing* ·75 per cubic yard, which is excessive; Hurst ·23—the latter equal to a little over four yards per day, which at 5¾d. per hour gives 1s. 2¼d. per yard. The great difference noticeable between calculated prices of concrete and some prices in estimates is to be accounted for by the fact that the concrete is made to absorb a great quantity of building rubbish surreptitiously used, and this method of saving is often reckoned upon by the builder. Concrete to receive paving in thin layers under 12in. thick involves extra labour for spreading. In a cubic yard of concrete deposited the surface would be levelled under any circumstances. Taking the average depth of concrete arbitrarily as 24in., there would therefore be in the case of a 12in. layer twice the superficial proportion of levelling per cubic yard; cost at 6¼d. per hour, ¾d. The value of a 12in. layer would therefore be one-third of the normal price of a cubic yard plus ¾d. A 6in. layer would have four times as much levelling; its value would be one-sixth of the price of a cubic yard plus three times ¾d. = 2¼d. When concrete is made with broken stone, sand sufficient to fill up the interstices should be added.

Six of Stone to One of Lime.—

Cost of six cubic yards broken stone	
Three yards sand	
One yard lime	
Value of seven yards 7)	
Add labour and water	
Value of one yard	

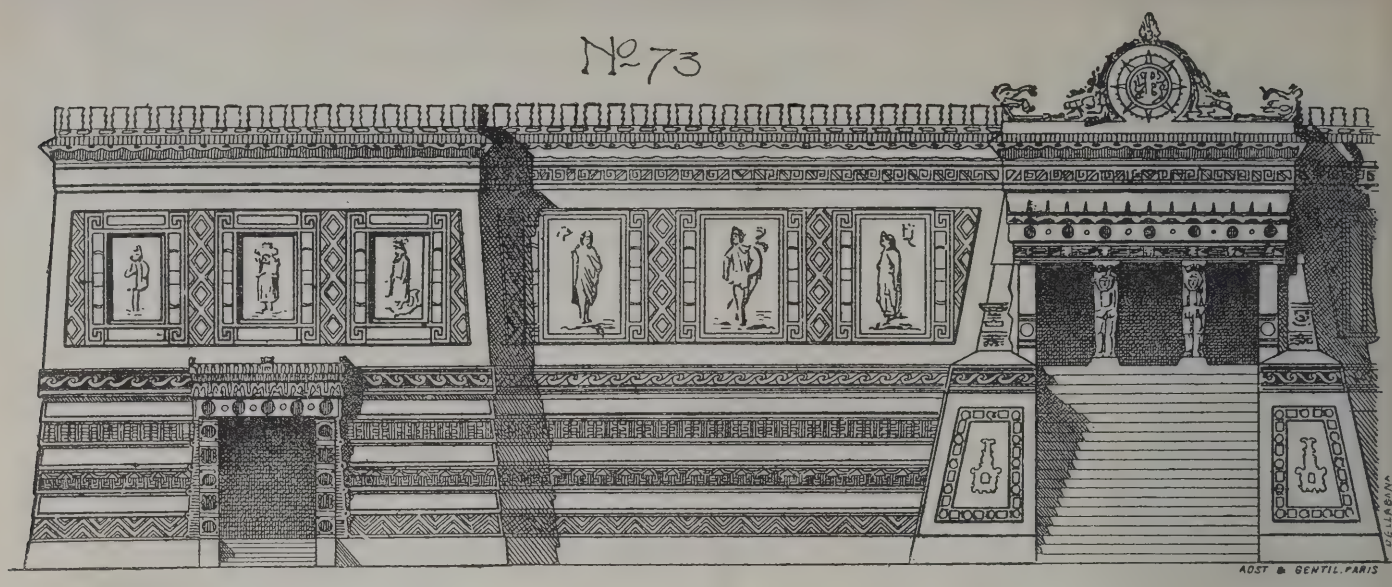
Concrete-Mixing Machines.—The advantage in large works derived from the use of concrete-mixing machines is shown by the following extract from "Newman on Concrete." "At Newhaven a *portable* continuous mixing machine, running on ordinary rails, designed by Messrs. Carey and Latham, was used. It could deliver 70 cubic yards of concrete per hour into the timber framing, and a lineal yard per day of the upper portion of the breakwater was thereby completed. The fixed continuous machine automatically measured, mixed, and delivered into a barge 100 tons of concrete in 20 minutes. At Newhaven Harbour works it was found that the labour on a 100-ton bag of concrete cost 35s. by this mixing machine, and £5 5s. by piecework hand mixing. The cost of mixing the raw materials by hand was about 1s. 2½d. per cubic yard, but only 5½d. by the portable machine." This machine has been improved since the above was written, and Carey and Latham's patent, made by Wilson, of Liverpool, is the best in the market. Its work on the Manchester Ship Canal, and other recent works of large size, has been strikingly successful. The mechanical measuring and mixing of the materials insures a uniformity of quality such as hand labour can never effect. The method of calculation of cost of concrete mixed by machinery would be substantially the same as suggested for use of a derrick crane. The necessity for travelling gear and sand and ballast hoppers varies with circumstances; but without these the cost of the machine on railway at Liverpool, with engine and boiler (list prices), is as follows:—

10 cubic yards per hour,	£325
20 ,, ,,	£520
40 ,, ,,	£640
70 ,, ,,	£720

All subject to 10 per cent. discount.

The power of the engine may be taken as 3 nominal horse-power for each 10 yards of concrete; 15lb. of coke per horse-power per hour; and water for boiler per horse-power per hour about 14 gallons. The use of such a machine requires a system of rails and tipping waggons for the delivery of the concrete. Such circulars as those of Hudson, of Leeds; Kerr Stuart, of Glasgow; and Matheson's aid book will afford all the necessary information as to price of rails, sleepers, and waggons, and their adaptability to the purposes above mentioned.

(To be continued.)



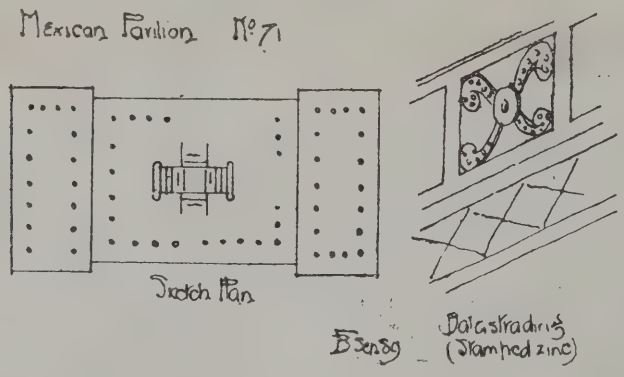
Façade principale du pavillon du Mexique.

CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—XV.

MEXICO.

THE architect of this building was M. Anza, a Mexican.

The plan (No. 71) is composed of one large hall 131ft. × 78ft., and a small hall on either side with its longitudinal axis perpendicular to that of the main hall.



A gallery runs round the three halls, and there is a large lantern light in each, which serves for all the lighting, as there are no windows in the façade. There is a staircase in the centre of the large hall of the form shown, which leads to the galleries above.



The whole of the interior ironwork is painted with two tints of brown. The columns supporting the galleries run from top to bottom of the building and are finished under the laylights with conventional architrave, frieze, and cornice (No. 72).

The laylights are formed with T irons and coloured glass as in sketch. The staircase is of stone with wooden handrailing filled in with hollow cast-iron panels as sketch.

The interior facings are in zinc fixed to the iron framing, whose larger parts are bolted together, in order that it may be taken down and rebuilt with ease in Mexico, as it is intended to form a museum of it.

The interior, No. 73, from *Le Génie Civil*, is painted with two shades of chocolate, which give it a sombre effect, combined with its own architectural style. The walls batter inwards from bottom to top and are ornamented with bands of zinc repoussé in geometrical patterns and with fret patterns.

As far as the *motif* is concerned, the architect has reproduced one of the ancient Mexican temples, ruins of which are still found. The design is founded on one particular one, the Teocali (Temple of God) at Xochicalco, and everything in connection with the decoration has been studied in works on the subject.

The central feature is an entrance, No. 73, ascended by steep steps (a characteristic of these ancient temples) which, however, are too steep to be used nowadays, but which were used by the victims about to be sacrificed in the central porch above. Over this porch is a central feature consisting of the symbol of the sun (Tonatuith) presiding at the creation of Capactli, representing the fertilising power of the earth nourishing the human race.

The central parts of the façade are ornamented with symbolic emblems of the periodical feasts of the sun and fire, and the basement is decorated with the principles of this religion.

The frets and other ornamentation to the *zinc repoussé* are from potteries found in the neighbourhood of Texcoco. All along the façade at the gallery level are groups of statuary in bronze representing the arts, the agriculture, and the commerce of Mexico.

The exhibits consist of a fine collection of marbles and wood of all colours and descriptions, of which Mexico, it is well known, exports enormous quantities.

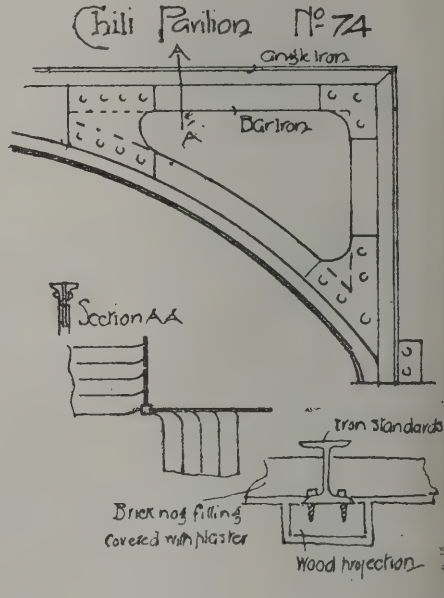
The crowning feature of the façade, we may add, also the cornices of the entrance doors, are in cast and galvanised zinc, while the rest of the facing is in *zinc repoussé*.

THE BRAZIL PAVILION.

M. Louis Dauvergne (expert to the Council of the Prefecture of the Seine) is the architect. It is situated opposite the entrance to the Argentine Pavilion, and is quite the antithesis of this last-named in regard to colour, being almost entirely white as to its outside, in a sort of Renaissance architecture.

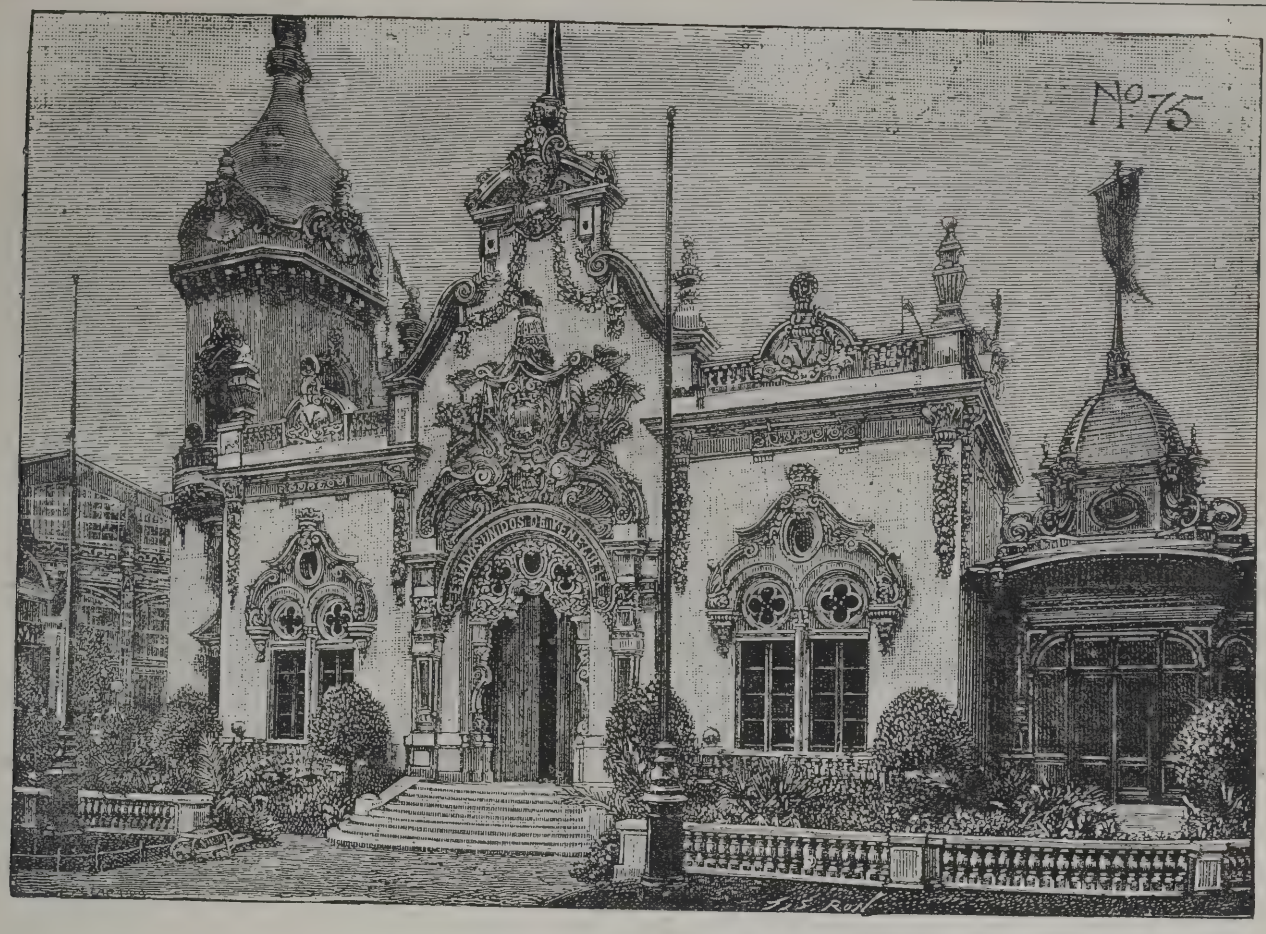
It covers an area of about 480 square yards, and is three stories in height, surrounding a central covered area with lantern in stained glass. The staircase is situated in a tower 130ft. high, leading off the main block.

The circular-headed windows and door openings are filled in with iron framing painted slate colour, and with a border of white and yellow tiles, with floral decorations, relieving the rather dull appearance of the slate-coloured ironwork.



The small circular columns supporting the semicircular arches to the first floor are somewhat bulbous in form.

In the interior, the ironwork, which is everywhere exposed (No. 74) is a dull slate colour, which is relieved by the rivets, caps, and consoles, &c., being painted in gold. The plaster ceilings to the galleries are also dark in tone, consisting of Indian red ground, with geometrical



figures in black painted on, and having black border.

A feature in the internal ironwork is the absence of sharp corners, which are avoided by putting in corner-plates between the two angle irons, for example. The internal caps and columns are not worth noticing, as they imitate stonework, and do not teach us the lessons which the "Galerie des Machines" and Argentine Pavilion do.

The steps to the staircase leading to the top of the tower are executed as one often sees them in France (see sketch), and which in a case of this sort is useful as giving more room to the passers at the necessary point.

The carcase of the building (No. 74) is composed of a framework of iron with wooden plates bolted to them to form the projections, &c., for the elevation, the whole pugged and faced with plaster, in this respect not showing the construction internally to anything like the same degree as the Argentine Pavilion. The tower itself is, however, built in brick. The roof and the floors are framed in iron.

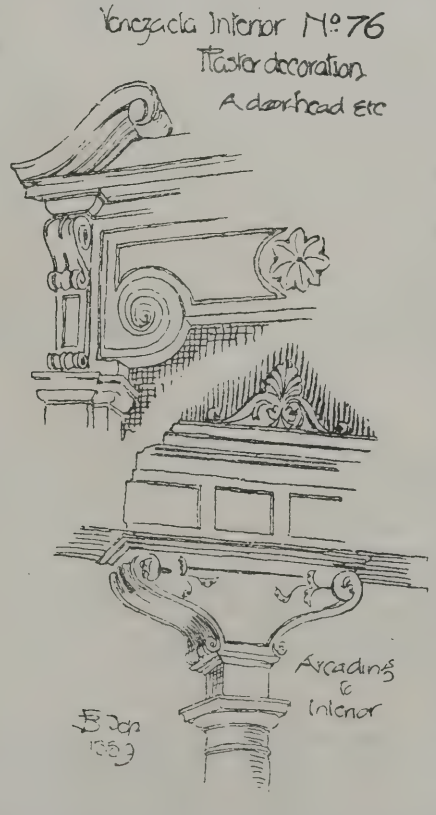
The ornamentation to the exterior is performed in "staff" or canvas plaster, differing thus considerably from the Argentine Pavilion, which is filled in with terracotta slabs, glass, &c., and which has the ironwork showing.

The six statues facing the entrance, and resting on pedestals, represent the six great Brazilian rivers (the Tiété, Tocantius, Parana, Amazon, San Francisco, and Parahyba rivers), and the "staff" ornamentation to the building itself has a Renaissance feeling.

THE VENEZUELA PAVILION

Is situated opposite the end of the Mexican Pavilion, and is by M. Paulin, a French architect, and occupies a site of 600 square yards. It is mainly a one-story building, and is grouped round a central covered courtyard, top-lighted, formed with Doric columns. Turning off the left aisle on entering is a small committee-room, and by its side a circular staircase leading to the balcony above. The right aisle gives access to an octagonal room, and also to a room running parallel with it. The design itself, as will be seen, is Spanish (No. 75 from *Le Génie Civil*) Renaissance of the time of Charles Quint. M. Paulin adopted this style because Venezuela had at one time been a Spanish colony, and it has no architecture of its own—like the Mexican, for example.

It is entirely white in colour. The external walls are formed in *pan-de-bois* (brick nog walling), on which the plaster of Paris is placed.



The dome of ogee shape, the heavy ornamentation over the entrance and over the windows (executed in "staff"), and the balustrading over the cornice, remind one of the palaces and buildings of Granada and Seville.

The aisle portion is in exposed wood framing with semicircular tiles, and the porch at the back is in wood also, beautifully executed in the Renaissance style.

The interior (No. 76), however, is the most satisfactory part of the whole design; it is much quieter in tone, and reminds one more of Italian Renaissance.

The modelling of the Doric columns, the entablature over, and the small circular lunette windows over this, are executed with as much care and delicacy as anything in the Exposition, and the whole of this interior is so refined in feeling that it seems a pity that it is all to be pulled down at the close of the Exposition. It is one of the best examples of the temporary pan-de-bois and plaster of Paris type, no ironwork being used.

CHIPS.

The second annual report of the South Wales Art Society, just issued, is of a satisfactory character, and speaks of steady progress in membership and influence, of increase of members, and of a balance on the right side in the banking account. The third annual exhibition will be held at the Public Hall, Cardiff, opening on November 15th.

The local board of St. George, next Bristol, have elected Mr. T. L. Lewis, of Islington, as surveyor, in succession to Mr. Cloutman, at a salary of £175 per annum.

The opening of Pers verance Mill, a new cloth factory, built at Woodhouse Carr, Leeds, for Mr. Peter Laycock, was celebrated on Saturday night. The new mill will necessitate the employment of about 200 more hands. The building, which is of brick, consists of five floors and contains 120 looms. The total floor space is 3,000sq.yds. Mr. W. S. Braithwaite was the architect.

Kinbuck Tunnel, about a mile to the north of Dunblane, on the Caledonian Railway, will soon cease to exist. More than a year ago a large staff of men under Mr. A. H. Boyle, contractor, commenced to convert the tunnel into an open cutting. The soil above the tunnel has all been removed, leaving bare the outside of the arch. Adjoining the operations was a large wet moss, into which the soil has been put, raising the surface to the level of the surrounding land and reclaiming several acres which previously were useless.

The Prince Regent of Bavaria has conferred the Royal Professorship upon Mr. Hubert Herkomer, R.A., who was born in Bavaria, and for some time pursued his art studies in Munich.

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EAST RIDING OF YORKSHIRE COUNTY COUNCIL HALL AND OFFICES. — SOUTH LEIGH CHURCH CHANCEL. — PRIORY CHAPEL, BURFORD CHURCH. — A BISHOP'S CROSIER.— PRUDENTIAL ASSURANCE COMPANY'S OFFICES, GLASGOW. — AMERICAN TIMBER HOUSES, NEW JERSEY. — THE ENTRANCE GATES, CLAYBURY ASYLUM. — OLD FRENCH BOUDOIR FURNITURE.

Our Illustrations.

EAST RIDING OF YORKSHIRE COUNTY COUNCIL HALL AND OFFICES, BEVERLEY.

THESE buildings are about to be erected in Cross-street, Beverley, on the site of the old Mechanics' Institute, and provide on the ground floor a suite of offices for the Clerk to the County Council, a large strong room for the county records, and four offices for the officials. The entrance is centrally situated in the principal front with a portico, and leads into a spacious corridor having immediately on the right side a large committee-room. The principal staircase will be constructed of oak with a handsome balustrade of fine-grained wainscot and Hungarian walnut. The staircase for the public is of stone throughout. The council chamber is placed upon the first floor; it is semicircular in its arrangement, and the size is 56ft. by 36ft., with deeply recessed windows and fireplaces; the whole of the fittings are of oak, and the ceilings and walls are relieved with enriched panels and pilasters. Upon the same floor a large committee-room is provided, and on each side of the landing are members' room, retiring room, &c. The gallery for the public will be upon the second floor, and access to it is obtained by a side entrance opening into the register square. The design provides for an extension if at any future time increased office accommodation should be required. The style of the building is Renaissance, and it is to be erected with red brick and stone dressings, at an estimated cost of £4,500, from the designs of Messrs. Smith and Brodrick, of Hull, architects.

SOUTH LEIGH CHURCH AND THE PRIORY CHAPEL, BURFORD, OXON.

WHEN the Architectural Association excursion party last month visited Stanton Harcourt and Witney they were within a mile or so of South Leigh Church, one of the most interesting buildings of its kind in the county of Oxford—indeed, we may say in England, because of the curious Mediæval paintings with which its walls are decorated. We give a photographic view of the east wall of the nave looking into the chancel, with the large mural representation of the Day of the Resurrection over the arch. Many of the figures in these pictures, which extend round the nave, are very curious and grotesque, but they are conceived in a devotional spirit throughout, though a love of fun is conspicuous notwithstanding. About 18 years ago the church was very carefully restored, and the architect, Mr. Clapton Rolfe, of Oxford, at considerable personal trouble, reclaimed these decorations from the incrustations of whitewash, the result of many years' coatings, and with the aid of Messrs. Gibbs and Moore, of Great Russell-street, has renovated, and, where necessary, renewed, the pictures. The dado decorations are in good taste, and are modern. The screen and altar were added by Mr. Rolfe, and will be found illustrated in detail in the BUILDING NEWS for April 25, 1873. The Priory Chapel at Burford will be found fully described in the BUILDING NEWS for Aug. 8th last, when we gave a plan of it, and a view of the exterior of the church was also given. The photograph printed to-day shows the altar and reredos of the chapel, as restored by the late George Edmund Street, R.A.

A CROSIER FROM THE R.A.

THE crosier is of silver-gilt with ivory staff, and the crook and knops jewelled and enriched with translucent enamels. The subject in the crook is Our Lord in Glory, and on the reverse Our Lord's Charge to St. Peter, surrounded by the Apostles; in the niches are the donor and certain of the bishops of the see with the tutelar saint of the diocese. The design was made by Messrs. Saul and R. B. North, of South Kensington. The drawing from which our plate is taken was shown at the Royal Academy this year.

PRUDENTIAL ASSURANCE COMPANY'S OFFICES, GLASGOW.

THIS structure, at the corner of West Regent-street and Renfield-street, is built of Corsehill stone and red Ruabon bricks, with red granite substructure, emery polished. The company's offices are at the corner of the two streets, and are lined with Burmantofts faïence, the ceilings being of the same material supported by ribs of walnut. The rest of the building is arranged for shops and suites of offices, the former facing Renfield-street and the latter entered from West Regent-street. Many of the offices look into a spacious internal court, faced with glazed brick-work and buff terracotta. The building is fire-proof throughout, and externally its warm colour contrasts not unpleasantly with the somewhat sombre tone which the atmosphere of Glasgow soon imparts to its excellent masonry.

TIMBER HOUSES IN AMERICA.

THIS sheet of working drawings is practically self-explanatory, with plans, elevations, a section, and a perspective view. The arrangement adopted in the designing of these houses, though based on the requirements of American dwellings, aims at securing the utmost accommodation within the restricted limits of the plan. This is based on the square with a view to cheapness. The walls are entirely of timber-framing and weather-boarding, save in the central part from which the fireplaces are carried up. The basement walls are of stone, and being built some few feet above the ground line to the level of the ground floor, form a plinth all round the house. The roofs are tiled, and the woodwork is painted white. Other houses, also by the same architect for the same proprietor, have on previous occasions been illustrated in our pages. This building contains a roomy hall, two sitting-rooms, and a kitchen, with offices and back staircase to the basement; four bedrooms on the first floor, and four attics above. The flues are grouped in one chimney stack. With the heating apparatus, in which hard coal is used, in the basement, no open fireplaces are required in the bedrooms. In a timber-built house the minimum number of grates is desirable on account of risks from fire. Mr. Maurice B. Adams, F.R.I.B.A., is the architect.

ENTRANCE LODGES, CLAYBURY ASYLUM.

THESE lodges form the chief entrance to the vast pile of buildings now erecting at Woodford, in Essex, as a fourth asylum for the old county of Middlesex by the London County Council. Mr. G. T. Hine, of Nottingham, is the architect. The lodges were built by Messrs. Higgs and Hill. Mr. H. Lovatt, of Wolverhampton, is erecting the asylum itself, and Mr. Gabbutt, of Liverpool, put in the foundations, which, with the walls, boundary, fencing, lodges, and gateways, cost £50,000. The contract for the asylum is about £340,000 besides.

OLD FRENCH BOUDOIR FURNITURE.

THE little Secrétaire of Kingwood marquetry is a beautiful specimen of the best period. It is mounted in ormolu, and decorated with Sèvres plaques, the falling front, inclosing drawers, is inlaid with a Sèvres panel, painted with a pastoral group. This elegant piece of furniture, whose value might be reckoned in hundreds of pounds, stands only 3ft. 9in. high, the length being 1ft. 6½in., and depth 11in. The escritoir, besides being made by one of the most skilful of French artists, Riesener—or possibly his master Olben—has over and above its especial merit as a work of art, a deep interest attaching to it, for it is said to have been made for Marie Antoinette. Riesener, who was born about 1730, was frequently employed by the unfortunate Queen, and some pieces of furniture which he made for her are known to be in existence. David Roentgen (commonly known as David) did the chased ormolu work with which it was ornamented. The escritoire is made of tulip-wood, inlaid with flowers and trophies, &c., in plain or tinted wood. The whole of the contour is curved, this greatly adding to the difficulties of its production, and lending also a certain feminine air of softness to its appearance. The falling front is cylindrical, and incloses drawers with inlaid fronts; beneath this is a shelf made to slide in and out. The large drawer, shown open in the sketch, is made with three compartments, having inlaid lids, the central one opening back to form a mirror, and all are fitted with the requisites of the toilet. The height is 3ft. 5in., and the width 2ft. 6in. Both pieces of furniture form part of the the valuable collection bequeathed to the nation by the late Mr. John Jones.

CHIPS.

An equestrian statue of the late King Victor Emmanuel, which has been erected in the new quarter in the centre of Florence, was unveiled on Saturday in the presence of the Royal family. The statue is the work of the sculptor Zocchi.

An organ was used for the first time in Troqueer Church, Dumfriesshire, on Sunday. The instrument was built by Messrs. Forster and Andrews, Hull. The whole of the Established Churches of Dumfries and Maxwellton now employ instrumental aid in the service of praise.

The surveyor to the Local Board of Hunsworth has been missing since the 11th inst. At the last meeting of the local board a letter was read from the assistant local auditor (Mr. H. McRich), complaining that a new book had been substituted by the surveyor for the old one, although the latter was not filled. The surveyor had told him that whilst making out his accounts on the 16th August he had upset an oil lamp he was using, and the result had been that the whole of the book had been burned, with the exception of the stamp given by Mr. J. L. Adams at the last audit. When he disappeared Harker had just received an advance of £28. Harker had received notice to appear before the board to explain matters on the day that he disappeared. The board have placed the affair in the hands of the police.

The death is announced, at the age of 84 years, of Mr. George Cousin, formerly in extensive practice in Edinburgh as an ordained surveyor. For many years he was a member of the city council, and took a prominent part in all the questions which came up for discussion, specially the City Improvement Scheme, with which the name of his brother, the late Mr. David Cousin, then city architect, is associated, as also the various schemes for the water supply of the city.

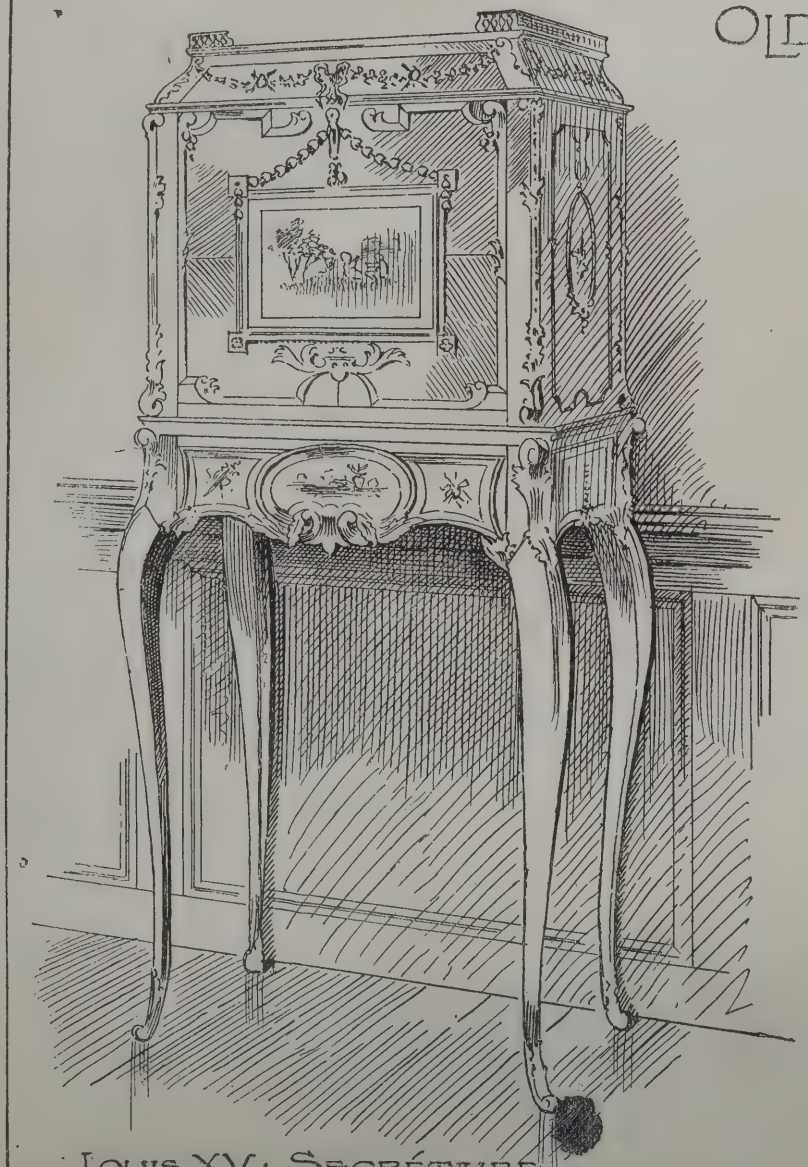
The new premises of the Iron Shipbuilders' Society at Jesmond, Newcastle-on-Tyne, were opened on Monday. Mr. B. Barton was the contractor.

The Ipswich Town Council considered at their last meeting a letter from Mr. Felix T. Cobbold offering as a free gift a valuable corner site in St. Clement's, Fore-street, lately occupied as a wholesale druggists' warehouse, as a site for proposed baths for the district. Mr. Cobbold offered to supplement this gift by £1,000 towards the estimated cost of alterations, with a further sum of £200 if Mr. T. W. Cotman, of Ipswich, be appointed as architect, and another £100 if Mr. Girling be chosen as builder. It was unanimously agreed to accept the gifts, and to appoint Mr. Cotman as architect; but under the Corporations Act the town council were advised that they could not appoint a builder without competition.

The new Roman Catholic Church of the Holy Rood, in Market-street, Watford, was opened on Tuesday week. It is a cruciform edifice, consisting of chancel, transepts, aisles, and nave, with a turret on either side of the junction of the chancel and transepts. The style is Late Decorated, and the materials are local flints and tiles, with freestone dressings. Chairs for 500 persons are provided. Mr. G. F. Bentley is the architect, and the builders are Messrs. Thomas Turner and Co., Watford.

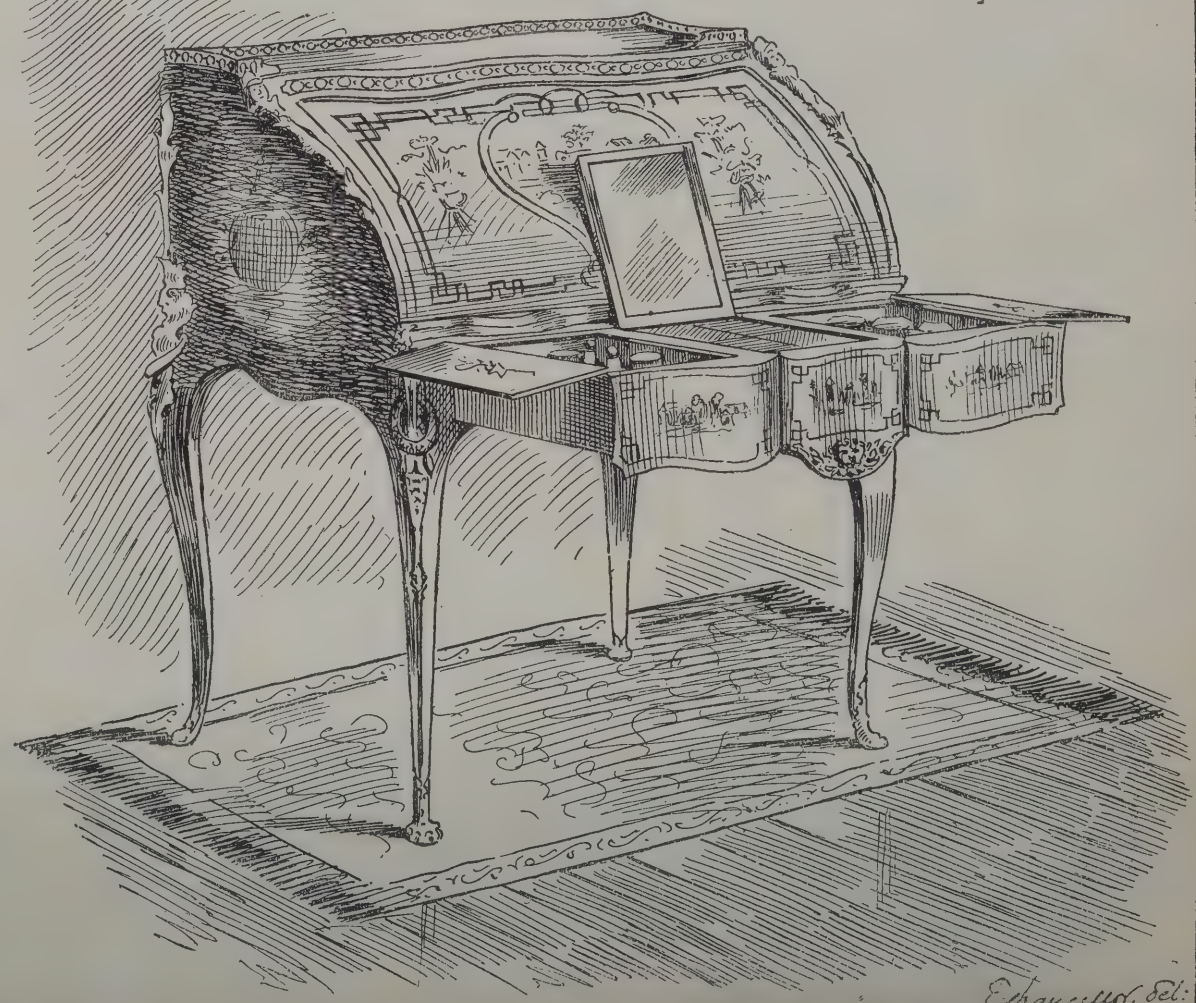
The parish church of Buckland All Saints, near Sidmouth, has been reopened after restoration. A porch and a vestry have been added, the flooring and seating renewed, new windows fixed (the east window being a special gift), and various other improvements have been effected. The work has been done by Messrs. Farr and Sons, builders, of West Alvington.

OLD · FRENCH · BOUDOIR · FURNITURE ·



LOUIS XV · SECRÉTAIRE

ESCRITOIRE · À · TOILETTE · FORMERLY · BELONGING TO QUEEN · MARIE · ANTOINETTE ·



E. Chancellor. del.



THE ENTRANCE GATES, CLAYBURY ASYLUM.—G. T. Hine, *Architect, Nottingham.*

WAYSIDE NOTES.

MR. EDWARD J. POYNTER, R.A., writes to the *Times* of the 23rd, in the matter of the preservation of ancient monuments in Egypt. His letter and suggestions are contributions to a discussion on the acts of vandalism and wanton destruction that have been largely committed in the country of length without (much) breadth, during the time of the British control. Mr. Loftie and Mr. Petrie had already written on the subject, showing the losses that have been sustained in the way of damage to temples and tombs along the banks of the Nile. According to the accounts of these gentlemen, there is much to regret in this way. Damage "by tempest and accidental fire," as the lawyers have it, even extended over centuries, accounts nothing, apparently, when compared with the havoc wrought by virtue of the unscrupulous manners and customs of the demoralised "Fellah" and the vandalism of tourists, personally conducted or otherwise—most probably the former—as the men who wander about Egypt in search of the archæologically interesting, accompanied only by a dragoman, are of a stamp not given to cockney pettinesses.

It is unpleasant to be told that the vandalism and destruction have been coincident with the British occupation. It is little to the national credit. Centuries of ordinary decay, say the writers personally acquainted with the antiquities of Egypt, count nothing beside the havoc of the past year or so. The direct cause of this seems hard to explain, unless it be that since English soldiers have been established at Cairo, tourists have had more confidence in grubbing about the deep, sunless recesses, and silent, out-of-the-way galleries, of pyramid, tomb, and temple. A badly-founded confidence this, one would think, remembering the slaughter of the people of Egypt struggling against a grinding taxation, the memory of which must yet rankle in the native breast; and it would seem reasonable to suppose that travellers contemporary with the authors of "Eöthen" and "The Crescent and the Cross," would have been received with more good-fellowship than post-Kassassin and Tel-el-Kebir tourists. Anyhow, the reports of acts of vandalism increased so largely during the last year or so, point to an increase in the number of curious sightseers; and, indirectly, the same cause may lie at the bottom of the destruction and spoliation of antiquities by the natives, who could sell their ill-gotten trophies and spoils for much gold.

The suggestion thrown out by Mr. Poynter, as hon. sec. to the Society for the Protection of the Monuments of Ancient Egypt, is that there should be appointed an official whose duty it should be to supervise the various antiquities, and control the present and appoint new, custodians, to the old buildings and ruins. The arrangements at present in vogue for the guarding of temples and tombs are remarkable only for their inadequacy. The central authority, if so it may be described, is wholly ineffective, and local representatives are open to bribery. A properly qualified and energetic official of the nature suggested by Mr. Poynter would be able to organise a real protection against the wanton destruction and acts of vandalism. Unfortunately there seems to be a very considerable amount of difficulty in the way. The S.P.M.A.E. have done their best for some time past, but have received little or no encouragement either from the English Government or from the Franco-Egyptian Museum. As an architect, one can understand the difficulty. It is hard enough to awaken in the public mind any sympathy with schemes for the protection and reparation of antiquities in this country; abroad the difficulty is four-fold. As a rule, funds are hard to raise; but in the present case the chief difficulty seems more to do with lack of inclination out in Egypt itself. Until this is overcome Mr. Poynter and his friends will make little headway. With their endeavours we all however heartily sympathise, and hope that in the near future they may be covered with the fullest success.

Some details of the recent regrettable fire at the Alhambra have been furnished by Mr. Henry Stainer, British Vice-Consul at Granada, who was awakened from his slumbers on the night of the 21st inst. by the general flurry and bustle attending the conflagration. Mr. Stainer says that when he entered the palace about midnight the nature and vehemence of the fire was such that the building seemed doomed to complete destruction. The flames appeared in three places at a time, leading to the general supposition that a dastardly act of incendiarism had been committed, and causing a chorus of indignant declamation from the assembled people. All Madrid and his wife seems to have been present, and numbers assisted in the work of staying the ravages of the flames. By two o'clock the fire was localised to the Court of Alberca and the Salla de la Barca, the flames being prevented from spreading to the Court of the Lions and Hall of the Ambassadors by prompt cutting away of roofs. At five o'clock the fire was smouldering only, and all danger of further destruction at an end. Neither does the damage appear to be quite so extensive as we supposed last week. The roof of the Salla de la Barca has been entirely burnt; but, although the colouring is "disfigured"—Mr. Stainer doubtless uses a rather mild term—the walls remain intact. The gallery at one end of the Court of Alberca is destroyed; but this, excepting some rooms on one side of the Court, comprises, apparently the whole of the damage. The fortunate possessors of one of the more elaborate works on the Alhambra may, therefore, refer to their pages, and ascertain the extent, on plan, of the damage. I did think it might be worth while to run in to the Museum library, and refer myself; but on second thoughts felt sure that "Jones" would be at a high premium, and architects and artists crushing in numbers the approaches to the dome. Not having my weather-beaten A.A. Soirée hat in readiness, I judged it wise to stay away.

According to Mr. Stainer, what has been burnt can be all restored except the ceiling of the Salla de la Barca and the colouring of the walls, which is much like saying that having lost a sovereign, one had found it again, except nineteen-and-six-pence—for the beauty of the Alhambra is in its colouring. Without that it loses its meaning, and the architecture proper becomes a mere framework or skeleton. If the colouring is destroyed it would be vain to restore the marble, wood, or plaster that had been dignified by its presence, and one can well imagine that given a knowledge of the colours employed, some register of which Owen Jones has doubtless made, it is yet hopeless to give even an approach to the effect produced by the Moorish decorators, by the most careful restorations. Ancient Saracenic colouring may safely be classed among the lost arts. Writers have sought to elucidate the principles upon which the designers of Saracenic ornamentation and colouring worked; but if the result of their teaching are to be found in modern attempts, it has certainly been misdirected labour. We know that there are many things that a man can do and yet not be able to imbue others with the feelings and appreciations fitting them for similar work; in this way it may be that Jones, after all his study and with his love of Eastern colouring, acquired power to do, see, and feel what it was impossible to teach.

All honour to the Rev. F. W. Ragg, M.A., the vicar of Marsworth, near Tring! In the year 1880, Mr. Ragg was appointed to the vicarage, and found the church in a very unsound state. With about £200 subscribed towards the restoration, the worthy vicar set to work himself as an ordinary mason, and with the aid of one professional stonemason and a few farm-labourers who voluntarily assisted, he restored the windows, took down the dangerous buttresses and rebuilt them, made good the south wall, and, with the aid of a carpenter, raised the roof of the nave. Having no funds left to pay the mason and carpenter for further services, he continued his good work, completing the buttresses and walls, building a parapet, refacing the tower, cutting and erecting a chancel arch, &c. After an attack of rheumatic fever, due to exposure when working, the vicar continued his work. Now, some may exclaim that this energetic clergyman was spoiling the church, the property of the nation, &c.; but I see nothing but what is admirable in Mr. Ragg's work. The church will not be cursed with 5 per cent., and not a little poetry will be in its new stones. We may rest assured that nothing except the absolutely essential was done in this novel restoration. The job-making, which I make bold to declare frequently takes place in connection with restorations by the profession—to its lasting disgrace—was absent. In its place we have a vicar who, for the love and interest of his work, patiently, and labouring with his own hands, repairs and restores stone by stone. If in any part the slight innovations be open to criticism, I would despise the man who criticises under such circumstances. And there is no actual need to suppose that the work was other than strictly architectural. Mr. Ragg, doubtless, had advice and assistance from some friendly architect, voluntarily, as from the labourers. He could certainly have commanded such assistance from scores of competent, benevolent men.

If only other vicars of old village churches would follow Mr. Ragg's noble example, and thus work to the glory of God and the dignity of man, it would be well. We should see fewer old buildings tumbling into ruinous disrepair, on the one hand, and sleek, harsh, and over-restored on the other. Such works would always be carried out in the true spirit; nothing would be done but what was absolutely necessary for the good repair of the building. Every clergyman of the Church of England having an old unrestored village church going to decay for want of funds, may not have the ability for work such as that undertaken by the vicar of Marsworth; but there must be several just fitted for the task. And if fitted for the work, and having a liking for practical building, as very many gentlemen have, the leisurely repair of a small village church, on Mr. Ragg's plan, with such assistance as can be afforded, and, in the long summer evenings, voluntary assistance from good souls in the parish, cannot but be a labour of love and delight to those engaged. It would save some of our beautiful English village churches, out of the few that remain undestroyed, from being made "jobs." The occasional crude piece of work, that might be expected here and there, would be far less objectionable than the masses of new masonry, &c., put in in place of old work that should have been repaired stone by stone. In the stead of a contractor scheming to make the job pay, and an architect with a money interest, would be labourers working at a fair wage with those who could afford voluntary labour, and instead of a "job," would result a piece of handiwork imbued with all the poetry of church-work of the Middle Ages. GOTH.

CHIPS.

In Carlisle Consistory Court a faculty has been granted to enable the vicar and churchwardens of Casterton to make extensive repairs and alterations in the parish church. The roof is to be renewed, the floor relaid at different levels, the church reseated, and new pulpit, reading-desk, and communion table provided. The organ-chamber will be enlarged, and a new organ erected. The church will be lighted with gas, and the windows will be reglazed.

Extensive additions are about to be made to the workhouse in Oxford-road, Reading, from plans by Messrs. Charles Smith and Son of that town. The works have been let by the guardians in two contracts, the chief one, that for a new hospital, having been taken by Messrs. Higgs and Sons at £7,100, and that for the remainder of the work, including entrance block, receiving wards, and vagrants, having been taken by Mr. Lewis at £3,373.

The Queen's Hotel in St. Mary-street, Cardiff, is about to be rebuilt from designs by Mr. J. P. Jones. The new structure, which is estimated to cost between £12,000 and £14,000, will be Renaissance in style, four stories in height, in addition to attics in the lofty roofs, and Massard pavilions to two chief angles; the facing materials will be red bricks, with terracotta for dessings.

Mr. W. H. Thorp, architect, Leeds, has been commissioned to prepare plans for the new medical department of the Yorkshire College, which is about to be erected on the site acquired near the General Infirmary at Leeds. Accommodation is to be provided for about 400 students, and it is intended that it shall be one of the best equipped institutions of the kind in the country. With that purpose in view, Mr. Thorp is at present visiting the Medical Schools of Newcastle, Edinburgh, Cambridge, and London.

The Bristol town council having applied to the Local Government Board for sanction to borrow £30,000 for the extension of the lunatic asylum at Stapleton, Mr. J. Thornhill Harrison, M.Inst.C.E., held an inquiry at the Council House on Friday into the matter. Mr. Oatley, of the firm of Crisp and Oatley, the architects of the new buildings, produced and explained the plans, which have been approved by the Home Office.

THE KNIGHTSBRIDGE IMPROVEMENT.

THIS week the long-talked-of scheme for the improvement of the high road at Knightsbridge has reached such an advanced stage of agreement between the vestries of St. Margaret's, Westminster, and St. George's, Hanover-square, as to render the plan fit for realisation at no very distant date; indeed, so far as we can see, there is no reason why it should not be carried out during the coming year. The cost is estimated at £32,067, of which sum St. George's Vestry, at their meeting on Tuesday last, unanimously agreed to contribute £8,000, as required by the London County Council. The property which will be partly removed extends from William-street, where the Great Northern Railway office stands, to Wilton-place, near the Alexander Hotel. The ground landlords are the Ecclesiastical Commissioners, who have afforded every facility for the development of the plan, and inasmuch as the leases are all about to terminate, none of the tenants can claim compensation. They will, however, be enabled to renew their leases on easy terms on the new frontages. The local authorities will obtain a certain recoupment by the erection of better frontages, and in so far as the public is concerned the improvement will be of the greatest advantage. The roadway, which at this point is now exceedingly narrow, will be made at least 70ft. wide throughout, thus affording relief to the chronic state of congested traffic at Albert Gate, which has of late years become exceedingly inconvenient, in front of the French Embassy, owing to the increasing demand for property in this neighbourhood, followed by extensive rebuilding. This thoroughfare is, in point of fact, one of the only two direct roads out of London westward, and at St. George's-place, Knightsbridge, this great highway is really narrowed to the proportions of a by-street at present. Its limited proportions are rendered all the more conspicuous by the erection of the immense block of mansions, in flats, at Albert Gate, rising up like a Tower of Babel in the midst. Already the old cab-stand next Humphreys's well-known corner at the top of Sloane-street has been removed, and other improvements are about to be carried out by private enterprise. The desirability of making this public alteration a thorough success is acknowledged, of course; but unless a portion at least of the old buildings on the Hyde Park side of the road are set back, the improvement will scarcely deserve the character of completeness. Looking at it only from a commercial standpoint, such an extension of the present proposal could be made to pay, for the existing property at this point is quite unworthy of so important a position, and requires rebuilding. The price, too, just obtained for the land further along, at the junction of the Brompton and Knightsbridge-roads, of £4 a foot, is sufficient evidence of the value of property in this neighbourhood for building purposes. A reference to the map will at once show that a slice requires taking off from Trinity Episcopal chapel to the shops which adjoin the park-railings, and thus a clean sweep might easily be obtained right away from Piccadilly to High-street, Kensington, past the Barracks, the Albert Gate Mansions, and Humphreys's Hall, at once affording ample space and avoiding the present ugly corner. There is one other urgent improvement of a minor kind which certainly needs attention, and it is the suppression of some of the many names which do duty along this great road. Thus, from the Wellington Statue we have at present St. George's-place, Lowndes-terrace, and Middle-row, all occurring one after the other, besides the portion of the road known as Albert-gate; after this the High-road, Knightsbridge, commences. "Knightsbridge-road" throughout would answer every purpose, and be far less confusing. We commend this suggestion to the vestry.

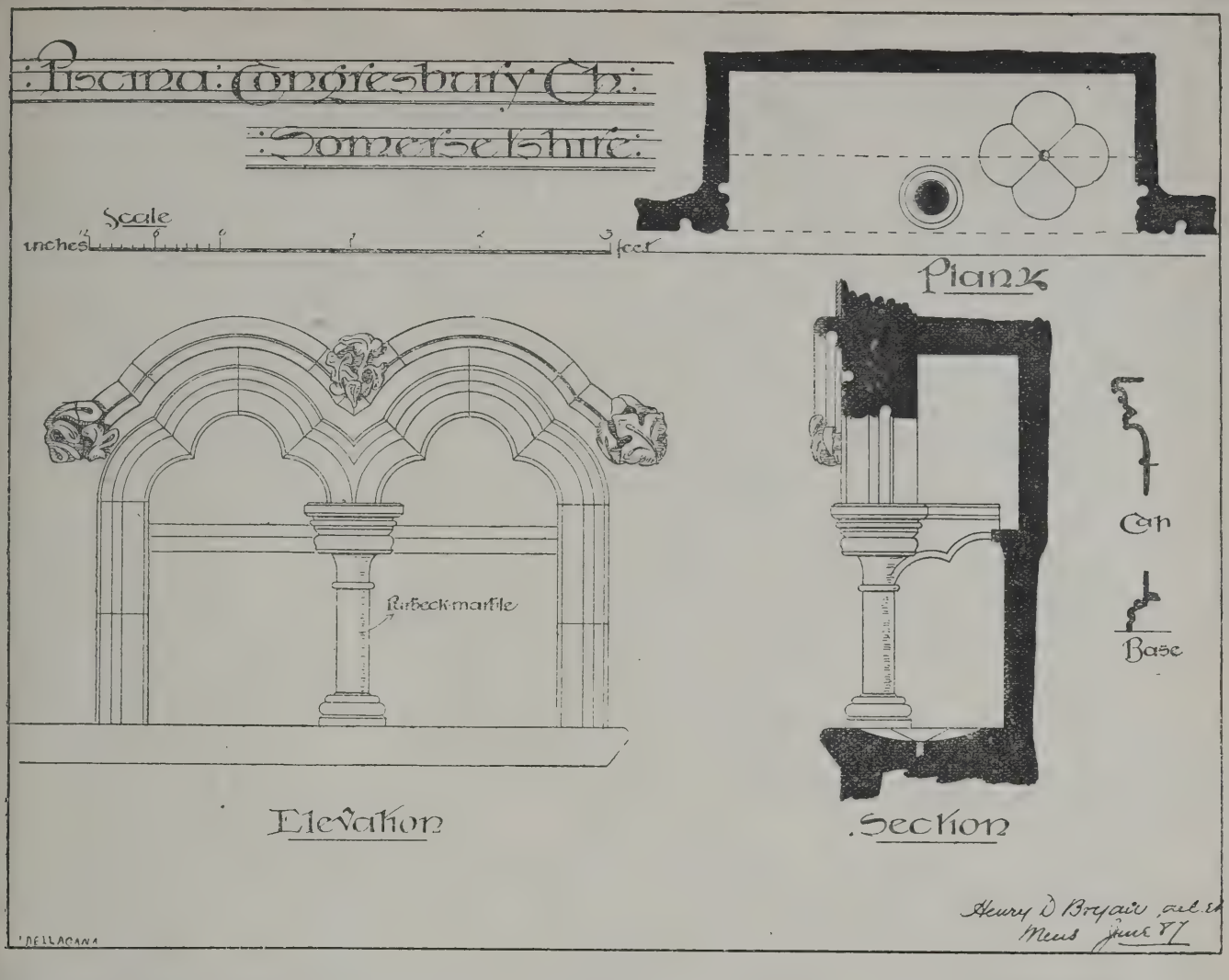
AN EXHIBITION OF ARCHITECTURAL PHOTOGRAPHS.

THERE is now on view, at the Royal Architectural Museum, in Tufton-street, Westminster, a collection of architectural photographs, chiefly from Oxfordshire, by Mr. John L. Robinson, A.R.H.A., architect, of Dublin, which will well repay a visit. The views were taken during the recent excursion of the London Architectural Association, on the trip which the members of that Society made to Oxford and the neighbourhood last month. They include not a few pictures from the city and colleges of Oxford itself, and some, at least, of these illustrate parts of the University buildings not generally familiar, and certainly seldom photographed, notwithstanding the fact that other amateur camera artists are constantly engaged in the colleges and their precincts securing views for their folios. The specimens in the present exhibition are taken necessarily from an architect's point of view, showing the buildings, in the majority of cases, either for some special piece of detail, or, at least, on account of a particular grouping, as characteristic of the type of design under study. Taking these studies in the order in which they are arranged in the hall, we note at starting two views looking up "The High," at Oxford, and giving Mr. T. G. Jackson's admirable new school and college buildings on the right and left of that classical thoroughfare. The old timber-house facing "The Mitre," also in the same street, occupies picture 2, and on either side are interiors of Christ Church Cathedral, that of the choir, showing Wolsey's elaborate groining, being specially interesting. Magdalen College supplies the subjects for some first-rate views, in which the great tower naturally forms a conspicuous object, with its beautiful belfry. Merton College Chapel also has a grand square tower, once part of an important parish church, which shows well in print No. 12. New College Chapel has a vast interior; but the altar screen greatly needs the missing twenty-six statues to fill the remaining empty niches. Already twenty-four of the upper niches are occupied, including the crucifix in the centre, and their effect, so far as they go, is very good indeed. An exterior of this chapel is given on plate 11 looking over the remains of part of the city walls, now surrounded by the garden of New College. Merton College Library is one of the most interesting of its kind in Oxford, and the fittings are particularly so. Mr. Robinson, in photograph 13, gives a very good idea of their detail. Wadham College figures next, and then follow general street views of the "Broad," Radcliffe-street, with St. Mary's spire in the distance, and All Saints' campanile, lately restored, as seen from the north. Iffley Church occupies prints 18 and 19, the second view giving a good idea of its boldly-treated Early Norman ornamentation, for which the building is so justly famous. The figures in these views give scale and add interest to them.

Few buildings seen in this collection are more interesting than the series of structures which form the Grammar School, Hospital, and Church at Ewelme. No. 22 gives the courtyard of the Almshouses, and 21 shows the Church on the north side. The smaller plates 86 to 95 are devoted to other parts of these buildings, including two excellent detail prints of the grand and beautiful tomb, with its perfect statuary, in the ancient south chapel of Ewelme Church. Dorchester Abbey Church and Stanton Harcourt make famous material for some of Mr. Robinson's silver-print pictures, and right well has he managed to depict these celebrated buildings. The group from the latter place, including Pope's Tower (No. 24), is an instance worthy of reference. The ancient kitchen there comes well in print (25). Witney great parish church, with the graceful central spire which forms a landmark for miles, occupies the cards which follow the last named, and then we have a capital interior of Minster Lovel Church, showing how the tower is carried on piers within the walls of the main structure. Mr. J. L. Pearson's new pulpit and reredos are to be seen in the same view. The view of the inside of Burford Church is too dark to do it justice, and the views taken by Mr. Robinson in 1885, after the Banbury excursion, were much more satisfactory of this beautiful building. We give a view of the Priory Chapel in the same church in to-day's BUILDING NEWS, from a photograph done this summer by Mr. Ellis. Kidlington Church comes in picture 35, and the next three views are devoted with good purpose to Water Eaton Manor House, where Mr. Robinson photographed the excursion party, a feature being made of the "Order of the Garter" shown on that occasion. It is unfortunate that no good views of the chapel at this place seem to have been obtained. The screen inside is a particularly interesting example of refined Jacobean woodwork. Asthall, Minster Lovel, and Burford Priory all supply nice subjects for the prints which come next, including a group of the excursionists at Burford and a pleasing street view of the village of Kidlington with the elegant spire of the church in the background. There are about 150 photographs in this exhibition, so that we cannot mention all, even by name, much less give particulars of many of them. None interest us more than the small views which the artist gives of St. John's College, Oxford, showing Inigo Jones' admirable and refined buildings in the second quadrangle. Mr. Phené Spiers' drawing of the doorway leading to the gardens from this building, published in our pages for August 29th last, will give the reader a capital idea of the detail of the work which the photographs under notice display. As we have already said, there is no better Renaissance work in Oxford than this quadrangle. Quartermaster Wellard, in plate 55, gives an additional feature of a personal character, which the excursionists will value. St. John's College Hall is given by the photograph 57, and the garden front in 58. Wren's "Tom Tower" and Queen's College figure in subsequent views. The Mitre Hotel occupies print 71, and the Bodleian Library No. 65. Those who want a good set of photographs of the Jesse window, and other parts of Dorchester Abbey, will find them in Nos. 75 to 85, including the cross in the churchyard there, and the Norman leaden font in the south aisle of the abbey church. Coggs Church figures in plate 103, and 108 of Asthall, seen over the Windrush, is one of the most delightful pictures in the collection. It is just the subject for a good architectural water-colour. Stanton Harcourt, viewed from above the fish-ponds, in No. 96, is another like example. Woodstock Church is shown, but does not make a pretty picture. The concluding prints are occupied with some beautiful photographs from Evesham, showing the world-famed tower there, and some of the old plaster houses in the streets; others from Broadway, Worcestershire, and more prints still from Stratford-on-Avon, including the Memorial Theatre and Shakespeare's Birthplace. The exhibition is open free all day till Friday in next week, October 3rd.

A PATENT HYDRAULIC CALCULATING RULE.

MR. W. F. Stanley, the well-known instrument maker, of Great Turnstile, Holborn, W.C., has sent us a patent hydraulic calculating rule invented by Mr. Arthur Honeysett, C.E., an ingenious application of the slide-rule. The rule is made of boxwood, highly polished, and graduated with great nicety about 16in. long and 2in. broad. From a general examination of this rule, it appears to us to be a very useful instrument, as it will greatly facilitate the labours of the engineer in calculating the velocities and discharge of his sewers and pipes. The rule is constructed according to Bazin's formula $v = \sqrt{\frac{K\ R}{s}}$ where v = velocity in feet per second, R = the hydraulic mean depth, s = distance in which the fall is unity, and K = coefficient of the value $\frac{1}{x\left(y + \frac{1}{R}\right)}$, the values of x and y varying according to the nature of the channel. Eight scales are marked on the rule, A, B, C, D, E, F, G, and H, the four last ones being made to correspond to the four classes of the coefficients, according to the nature of the channel, the first class being for cement or smooth pipes, the second class for brick or ashlar, the third for rubble masonry, and the fourth for earth, river courses. By a sliding index the figure (marked 100) is brought opposite the value of the hydraulic mean depth on one of the lower scales corresponding to the nature of channel, then on another scale (marked D) will be found the velocities in feet per second due to the inclinations given on the slide, which comprise falls from 1 in 6 to 1 in 2,000, though inclinations flatter than the last can be obtained. To aid in adjusting the sliding index over the lower scales, a piece of talc marked with a line slides over the rule. By another adjustment of the slide the quantity discharged can be found. Scale A gives the square root of the fifth powers of values, by means of which the diameter of a pipe to discharge a given quantity can be found. Other tables at the back of the rule enable the engineer to find the area and hydraulic mean depth of segments of circular and oval conduits. All that is needed are a few examples of its application to make the rule intelligible. For sanitary and



hydraulic engineers and contractors, Mr. Honeysett's rule is especially valuable, as it will solve for them many complex calculations, and enable them to obtain results without the expenditure of unnecessary labour and time.

CONGRESBURY CHURCH, SOMERSETSHIRE.

IN the letterpress accompanying the sheet of sketches of the above church, which appeared on the 5th inst., reference is made to the interesting piscina. Of this feature I send a drawing which may prove acceptable to some of our readers. The piscina is situated, as usual, in the south wall of the chancel, and bears evidence of the all-pervading whitewash.

Hy. Dare Bryan.

24, College-green, Bristol.

THE LATE MR. ALLAN-FRASER, Hon.R.S.A.

MR. PATRICK ALLAN-FRASER, Hon. R.S.A., of Hospitalfield, near Arbroath, died on the 18th inst., aged 77 years. As Mr. Allan, he acquired some position as a portraitist and a painter of interiors, and also practised as an architect, one of his works being the mortuary chapel in Arbroath cemetery, but after his marriage with the heiress of the Frasers of Hospitalfield, he ceased to practise either art. He was an honorary member of the Royal Scottish Academy and President of the British Academy of the Fine Arts in Rome, an institution which he had been instrumental in establishing.

By his will Mr. Allan-Fraser has left the whole of his estates in Scotland, comprising properties in Forfarshire and Perthshire, in trust—(1) for the assistance and encouragement of young men not having sufficient means of their own who should be desirous of following out one or more of the professions of painting, sculpture, carving in wood, architecture, and engraving; and (2) to provide for the maintenance and support of aged or infirm professional men, being painters, sculptors, and literary men. For the carrying out of the first purpose of the trust, the deed provides that thirty young men shall be comfortably lodged, boarded, and clothed in the house of Hospitalfield. The age of applicants for admission is to be between 16 and 18, and a test is specified in order to satisfy the trustees of every applicant's fitness for the profession he desires to follow. The students admitted are to be indentured for four years. A qualified certificated teacher in the South Kensington Art Department, or otherwise qualified in painting or sculpture, is to be appointed governor of the house, and is to reside in a separate wing, to be built to Hospitalfield House. The students may be sent by the trustees to classes in Arbroath, and the trustees are to engage carvers and engravers to teach the students the use of tools; also to engage lecturers on subjects of science and art, or natural history. Power is also given to send students who have completed their indentures at Hospitalfield to the Continent for the completion of their education as artists, and an allowance is provided to each student for this purpose. Lastly, young people resident in Arbroath, between the ages of sixteen and twenty, may also be received and taught along with the students in Hospitalfield House. For the carrying out of the second object of the trust—viz., the assisting of aged or infirm professional men—the following are the provisions:—(1) That the number of recipients shall be ten, to consist of four painters, three sculptors, and three literary men, to be selected by the trustees; (2) the annuitants selected shall each receive £50 per annum during their lifetime, or so long as the trustees shall think proper. Among the additional bequests is a conditional donation, after fulfilment of the first two objects of the trust, of £50 per annum to be given to the Artists' Benevolent Institution, London, for the education of orphan children in connection with that institution.

It has been resolved to place a memorial of the late Canon Liddon in St. Paul's Cathedral. Towards the cost over £2,500 has already been subscribed.

COMPETITIONS.

Alexander Thomson Memorial.—A meeting of the trustees of the Alexander Thomson Memorial Fund was held in Glasgow on Thursday, the 18th inst., Mr. John Gordon, President of the Glasgow Institute of Architects, in the chair. The prize, £60, of the Travelling Studentship for the best set of drawings of a hall with side rooms was awarded to Mr. Charles R. McIntosh, 2, Firpark-terrace, Dennistoun, Glasgow. The drawings sent in were exhibited in the Corporation galleries.

General U. S. Grant Memorial.—The final award has just been made by the Grant Monument Association. It will be remembered that in the first competition so little inducement to participate was held out to architects of reputation, that few of them cared to have anything to do with the affair, and the judges agreed that none of the designs sent in were worthy of execution. The committee of the association then began again, rejected all the first designs, and arranged a limited competition between five architects: Messrs. Carrère and Hastings, C. W. Clinton, N. Le Brun and Son, and J. H. Duncan, of New York, and John Ord, of Philadelphia. This has resulted in the award of the commission to Mr. Duncan, who is the architect of the memorial arch in Brooklyn. The cost of executing Mr. Duncan's design is estimated at £100,000 sterling, so there is yet considerable uncertainty as to whether it will be carried out.

Whitefield's Tabernacle.—The plans submitted in competition for the rebuilding of Whitefield's Tabernacle in Tottenham Court-road, have been examined and reported upon by Professor Roger Smith, the assessor appointed by the building committee to award the premiums. We understand that the designs, as a whole, form a series very creditable to the competing architects, and that they will be shortly on view to the public. The report of the referee has been adopted by the committee.

Worcester.—The Victoria Institute, Worcester, Competition has been settled, and the design of Messrs. John W. Simpson and E. J.

Milner Allen, of New Inn, Strand, are the authors of the selected design. Mr. Alfred Waterhouse, R.A., was the professional referee. The architects of the chosen plans have promised us the loan of their drawings for illustration at an early date.

Engineering Notes.

St. Clair Railway Tunnel.—The great railway tunnel under the St. Clair River, by which the chief Canadian and United States railway systems are to be united, has been successfully excavated. It is formed between Port Huron, in Michigan, and Sarnia, Canada, and will allow the lines of the Grand Trunk Railway of Canada and the Chicago and Grand Trunk, Detroit, Grand Haven, and Milwaukee, and the Toledo, Saginaw, and Muskegon Railroads of the United States to be physically connected. The hydraulic shields invented by Mr. A. E. Beach (and also employed on the City and South London Subway), were used, and the sections operating from either bank of the river met on August 30. The tunnel is 6,050ft. in length from cutting to cutting, the width of the river being 2,300ft., and the actual boring occupied thirteen months. Mr. Joseph Hobson, of Hamilton, Ont., the chief engineer of one section of the Canadian Grand Trunk Railway, was the engineer, and the outlay on the tunnel will be about three million dollars, or nearly £600,000.

CHIPS.

The Duke of Clarence opened when at Cardiff, on Wednesday week, the new Grangetown Bridge, which has been constructed at a cost, for structure and apparatus, of £250,000, from plans by Mr. William H. Harpur, engineer to the Corporation. The bridge spans the River Taff, is of iron, is 464ft. in length, with a central span of 196ft., and weighs 500 tons.

Mrs. Welti Escher, of Zürich, has made a donation of five million francs to the Swiss Confederation for the creation of a Federal institution of plastic art.

The papers and plans connected with the scheme of making Paris a seaport have been deposited at the Hôtel de Ville for public inspection. They are to be accessible there until the 15th of November. The proposed canal from Rouen to Paris is to have a length of 180 kilomètres and a depth of six mètres. The seaport is to be constructed between St. Denis and Clichy. The expense is estimated at 135,000,000f. or about £5,400,000.

The work of refixing the bells in the tower of Rostherne Church is being proceeded with by Messrs. Taylor, of Loughborough. The bells are being hung on beams of oak from Tatton Park. When this work is finished the restoration of the venerable church will be completed.

A Wesleyan mission hall was opened at Old Hednesford last week. It is of red brick, with tiled roof and deal fittings, and seats 300 persons. Mr. F. W. Wheatley, of Hednesford, was the architect, and Mr. T. Mason, of the same town, the builder.

At an outlay of £1,100 the interior decoration of Trinity Wesleyan Chapel, Southport, has been completed, and considerable work done to the adjacent day and Sunday schools. The group of buildings, consisting of chapel, manse, schools, and houses for schoolmaster and caretaker, cover the largest site of any church property in Southport; they were erected 26 years ago by the late Mr. John Fernley, their present value exceeding £40,000. The carved stone pulpit and reading desk have been refaced. An enlargement of the organ, which occupies the west end of the nave, is being effected.

A new Sailors' Home and Rest were opened at Fowey, Cornwall, on Thursday, the 18th inst. The building is 40ft. long by 27ft. wide, and of three stories, has been constructed in Italian style from plans prepared by Mr. W. J. Sambles, architect and surveyor, of Fowey. It contains twenty-three rooms, including reading, recreation, and smoking-rooms, bedrooms, and bath-rooms, a mission-room, and premises for the caretaker. The mission-room is seated for 130 persons. The builder is Mr. Penter, of Polruan.

On Thursday, the 18th inst., the new peal of bells presented to the parish church, St Anne's-on-Sea, by the Lady Cecily Clifton, and hung in the newly-built tower of the church, were dedicated. The peal consists of eight bells. The tower, which has just been completed, forms the last portion of the fabric. It is placed at the west end of the church. On the south side of the tower over the entrance a niche is formed, and in it is placed a figure of St. Anne, to whom the church is dedicated. Mr. R. Knill Freeman, of Manchester, is the architect.

Building Intelligence.

Bristol.—A group of almshouses has been built in Dowry-square, Hotwells, from funds left by Lady Haberfield. The buildings have a range of 220ft., and are divided into six blocks, with party walls, as a protection against fire. There is a separate entrance to each block. Cattybrook red bricks are used in construction, the facings being of Box Ground stone; the roof is covered with Westmoreland tiles. All the outside woodwork is of teak, and the lobbies and passages are laid with Minton's encaustic tiles. The style is Queen Anne, and the building is of two stories. Provision is made for 12 aged men and 12 aged women. Each occupant will be given a furnished living room 13ft. by 13ft., with a recess for a bed; and also a kitchen and scullery combined, wherein are larder, coal bunker, dust shoot, &c. The boundary wall to garden is of brick, panelled, and surrounded with balusters of terracotta, and a freestone rail. Messrs. Pope and Paul are the architects, and Mr. Cowlin was the builder; the stone-carving was executed by Messrs. Davey and Bushell, of Bristol. The cost of the almshouses has been £10,000, exclusive of site.

Crickhowell.—The Public Hall, the foundation stone of which was laid on the 18th inst. by the Duke of Clarence, is being erected by a public company on a site in Beaufort-street, close to the centre of the town. The plans, which have been prepared by Mr. E. A. Johnson, architect, of Aberdeen and Newport, show that the building will be in the Renaissance style. The chief elevation has at the corner a tower furnished with an open stage and high mansard roof. The hall on the ground floor will be 75ft. by 40ft., the height from the floor—which will be of wooden blocks—to the centre of the open timber roof being 30ft. The room will be furnished to accommodate about 500 persons. It will be provided with a stage, with dressing-rooms adjoining (convertible into a large supper-room), and there will be as adjuncts the usual retiring rooms. There will also be a caretaker's cottage and armoury for the Volunteers. The walls are to be built of local grey sandstone, with Bath stone dressings. It is estimated that the cost will amount to £2,000, but the contract for building has not yet been let.

Dalton-le-Dale.—The parish church of St. Andrew, at Dalton-le-Dale, near Seaham Harbour, has been undergoing the process of restoration at the hands of Mr. R. Johnson, the Durham diocesan architect. It was reopened on Tuesday by the Bishop of Durham. The larger portion of the church shows the style of the early part of the 15th century. The building consists of nave and chancel, divided by an apparently modern arch. There is no trace of either tower or spire. The altar rails were taken from the cathedral at Durham in the beginning of the present century, and are the same as were presented to the cathedral by Dean Hunt in the year 1620. There is a very old form of sun-dial to be seen on the north wall of the interior of the church. It consists of six Roman figures, VII., VIII., IX., X., XI., XII., running the whole length of the nave, and the windows are so arranged that the sun indicates the time through each in succession. Such a curiosity is believed to exist in England only at St. Andrew's. About £400 has been spent on restoration.

Dublin.—The drainage system of St. Vincent's Hospital (built in 1843) has just been reconstructed from plans by Mr. W. Kaye Parry, C.E., at a cost of over £1,000. The contractor was Mr. Thomas Little, of Dublin and Kingstown. The new system has involved the abolition of all the old-fashioned conduits, and the substitution for them of vitrified pipes, with air-tight manholes placed at every change of direction, for the purposes of cleansing and examination, and also arrangements for trapping and ventilation. The hospital lavatories and laundries have also been entirely renewed, and enamelled washtubs and linen troughs provided. The hospital buildings, including the gardens, occupy a site of two acres in extent. The drain-pipes were supplied by Messrs. Parker and Hassell, of Nottingham; the glazed troughs and tubs by Messrs. Brown and Sons, of Paisley; the Sanitas and National w.c.'s by Mr. Thomas Twyford; the flushing cisterns by Messrs. Shanks and Co., of Barrhead; and the soil-piping by Messrs. McDowall, Stevens, and Co., Glasgow. The hospital will be reopened on Wednesday next.

Duncombe Park.—The beautiful mansion at Duncombe Park, Earl Feversham's Yorkshire seat, which was destroyed by fire on the 11th of January, 1879, is shortly to be rebuilt, the work to be commenced in the spring. Mr. Wm. Young, of London, is the architect, and the contractors are Messrs. W. and J. Kirkwood, of Edinburgh. The former building, of stone, in the Doric style, was from the design of Sir John Vanbrugh, architect of Castle Howard and Blenheim Palace. It was executed by one Wakefield, of Easingwold, and was completed in 1718. Some additions were made to the mansion by Sir Charles Barry, and not long before the fire the central dome had been renovated by the late Sir Gilbert Scott. The fire destroyed some good paintings, also some valuable medallions of the Twelve Cæsars. The servants' apartments, stables, coach-house, &c., which were not destroyed, were built in 1844-5, from designs by Sir Charles Barry. The site of the mansion is a beautiful one, overlooking the valley of the Rye, and with an extensive woodland view in the distance.

Edinburgh.—An interesting architectural find has just been made by the workmen engaged under the superintendence of Mr. Ross, architect, in clearing out the north transept of St. Giles' Cathedral for the purpose of forming a memorial chapel to Dr. Chambers. In taking down the west wall of the transept the workmen have laid bare the remains of a fine window in the Perpendicular style, which is the only large portion of the pre-Reformation external masonry that has been met with in connection with the work of reconstructing the cathedral. The jambs of the window have large bead and hollow mouldings with fine bases, and their capitals also have been carved in an elaborate manner. In the centre there has been an elaborate transom, carried on flat arches, the remains of which are quite perfect. The transom has been decorated with rich battlemented ornaments. The window was part of the original wall of the cathedral before the alterations of the beginning of the century were carried out. The transept was originally the old vestry; it was converted subsequently into the town clerk's office, and it was here that last month the supposed arm-bone of St. Giles was found. (By the way, the bone proves to be that of the *left* arm, and the relic preserved in Bruges Cathedral is also the left humerus of the same saint.) The window will not be built up, but will remain as an opening between the memorial chapel and a small gallery above the north doorway of transept. There was also found above the window parts of the original corbelling supporting the roof parapet. One of these fragments is in the form of a carved lion's head, in an excellent state of preservation, and the other is a large rosette. Both have been built into the responds of the arch between the cathedral and the memorial chapel. In taking down the wall to form this arch a Roman capital was found, the oldest piece of the original masonry of the cathedral yet met with.

Leeds.—A new building is about to be erected for the local branch of the York City and County Bank at the corner of Park-row and Lower Bond-street. The designs are being prepared by Messrs. Smith and Tweedale, South-parade, Leeds, and show a three-story building. The elevation in each thoroughfare is to be carried out in Bradford stone. The façades are divided into bays; the piers on the ground-floor are to be in moulded quoined courses; the upper portions of the bays are divided by coupled Corinthian three-quarter columns with carved capitals; and the whole is surmounted by a carved frieze, bracketed cornice, and pierced balustrade. With the exception of a suite of offices and the entrance in Bond-street to the first and second floors, which will be divided into other suites of offices, the whole of the ground floor is to be devoted to the bank, which will be 45ft. 6in. by 40ft. The manager's room and the waiting-room are divided from the bank proper by a moulded and glazed wooden screen. The chief suite of offices will be so arranged that, should the need arise, they can be added to the bank premises.

Longton.—The new Cottage Hospital was opened yesterday (Thursday). The buildings have been erected from the designs of Messrs. Ford and Slater, architects, of Burslem, selected from a large number of competitive designs. The works have been carried out by Messrs. H. and R. Inskip, builders, Longton, and Mr. Thomas

Blair was the clerk of works. The hospital (which has 38 beds) is said to be the largest of its kind, the nearest to it in size being the "Sister Dora" Hospital at Walsall, which has 36 beds. The ground floors form one level, steps being altogether avoided. The arrangement of the ground plan is on the pavilion system, in three distinct blocks connected by corridors. The central block, the only portion more than one story in height, is devoted to administrative purposes, and the wings right and left are the wards, in part of one of which is the out-patients' department. The warming is by open fireplaces and by hot water combined, the latter part of the work having been executed by Mr. Jackson, late of Newcastle. The amount of Messrs. Inskip's contract was £3,359 for the buildings, to which, however, must be added the cost of gasfitting, laundry fittings, and boundary walls, and that of providing furniture and fittings throughout.

RAMSGILL.—The parish church of Ramsgill has been reopened by the Bishop of Ripon after renovation. The church of St. Mary's, Ramsgill, erected in 1842, is of stone, in the Gothic style as then understood, and consists of chancel, nave, west porch, and embattled western tower, the total cost in the first instance having been a little over £800. Within the last three years the whole of the masonry has been repointed with Portland cement. The old pulpit, gallery at the west end, and the stiff-backed seats have been removed, and their places taken by an oak pulpit and open seats in pitch-pine. A vestry has also been added, the walls decorated, new windows inserted, and further improvements have been made in the building. The amount spent on restoration since 1887 is £300. The whole of the interior of the church has been painted, and the walls and roof have been decorated in colours. A dado in two shades of red is carried round the chancel walls as high as the window-sills, surmounted by a pomegranate border in green and gold. Above this the otherwise plain wall is marked out in strong brown cutline in such a way as to form a series of cusped niches, containing a sacred monogram in each, and arched in by a crocketed canopy, running beneath which is a riband text. Above this the different portions of the walls are diapered in colours. The principals and girders of the roof over the chancel are done in gold, vermillion, and black, forming a kind of feather pattern, tapering upwards. The whole of the windows have been glazed in cathedral glass in various shades, with borders of brown-pink surrounding each, and the east window has been filled with stained glass representing the "Annunciation and the Nativity." The stained glass and the art decoration throughout are the work of Messrs. Powell Brothers, of 30, Park-square, Leeds.

SUNDERLAND.—The new hospital for the treatment of infectious diseases, erected by the Corporation of Sunderland in Hylton-road, will be opened for the reception of patients on Wednesday next. The building stands on about 12 acres of land some two miles and a half from the centre of the town. There are five blocks of buildings—namely, the house department, the laundry block, and the three isolated pavilions, in which patients are to be received. The total number of beds in the hospital will be 42, but should the emergency arise, provision could be made for considerably more. The contractor's work has been executed by Mr. T. P. Shafto, of Sunderland, from designs prepared by the borough engineer, Mr. R. S. Rounthwaite.

The introductory lecture to the ninth annual course of lectures and practical instruction in plumbing will be delivered at the Polytechnic on Tuesday next by Mr. J. Wright Clarke. The Master of the Plumbers' Company will preside, and will also present the prizes to the successful students of last session. Plumbers and others interested in technical instruction may obtain tickets of admission, free, on application to the Secretary, Polytechnic, 309, Regent-street, W.

The memorial-stones of new board schools in Bloomfield-road, Tipton, were laid on Friday. The buildings will accommodate 250 children, and are expected to cost £2,000. Mr. Alfred Long is the architect, and Mr. Warton the builder.

At St. Michael's Church, Islington, last week, a new clock, having three dials, the work of Messrs. John Smith and Sons, of Derby, was inaugurated, and the peal of five bells rung, the latter having been re-hung by Mr. H. Stokes, of Woodbury.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLI., XLIX., L., LI., LIII., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—F. Holloway.—Alexis.—R. P. and Co.—T. C.—W. M. B.—R. Chatterton.

"BUILDING NEWS" DESIGNING CLUB.

WE have received numerous applications from intending members of our club, and have sent to all whose addresses are given copies of the rules on postcards. We shall shortly publish the list of awards of prizes for the last season's work, and at the same time will print the rules for our forthcoming sessional work. Any suggestions should now be made, and we shall be happy to favourably consider any practical methods for improving our club and increasing its usefulness.

Correspondence.

KIRKSTALL ABBEY.

To the Editor of the BUILDING NEWS.

SIR,—In your issue of the 12th inst. you refer to an artice which recently appeared in the *Leeds Express*, headed "Kirkstall Abbey Ruined," in which the Corporate Property Committee are charged with making sad havoc with the building. In reply to this irresponsible writer, may I quote from Mr. J. T. Micklethwaite's report to us on the present state of the building?

He says: "I found that since I had last seen the Abbey most of the suggestions made in Mr. St. John Hope's report had been acted upon, and much good work has been done in clearing the walls of ivy and other noxious weeds; the felling of trees, which in some cases had already done mischief, and in all threatened it, and by the uncovering of much which has long been hidden by fallen ruin, and accumulated earth and vegetation. This last has already made Kirkstall one of the completest and most interesting as regards plan of all the English Abbeys."

Any visitor can see for himself that where we have taken the ivy down the walls are in a much worse condition than where they have always been exposed to the weather. Many of the main stems of ivy were 6in. to 7in. in diam., and had threaded their way in and out, doing enormous damage to the walls. The trees growing between the walls were all more or less rotten, some so far gone as to be simply hollow pipes. The Committee gave strict injunctions to the workmen to take them down in sections, and this was most carefully done, save in the case of the last tree, which they tried to get down whole, but it turned out to be so decayed that it suddenly fell and damaged the refectory wall.

We have not, as has been suggested, been guided as to the treatment of the ruins by gardeners, but we have followed the advice of gentlemen who have a more intimate acquaintance with the subject than the writer in the *Express*.

The amateur photographer may anathematise us for getting rid of these picturesque but deadly parasites; but when it is a choice between preservation of this Abbey, or the ivy, I think the public viewing our work will say we have not abused our trust.—I am, &c.,

JOHN TWEEDALE, F.R.I.B.A., and Member of the Leeds Corporate Property Committee.

12, South Parade, Leeds.

"THERE'S WORK FOR ALL TO DO."

SIR,—Before employing an architect, the question naturally asked is—"Where has he received his training?" Many people, however, do not make inquiries, and it appears to me that no one should be admitted to membership of the R.I.B.A. or S.A. who has not undergone training in an architect's office, so that these letters after his name should be a guarantee that he knows at least something of architecture. Without this or registration I do not see that we should be much better off if "C. F. M.'s" suggestion were adopted, because now any man is at liberty to call himself an architect, whether he is qualified or not.

But these letters would not help the matter, for I believe both societies make it a rule for members not to be associated with the building trade. The Society of Architects should make a fresh start on sounder lines, and alter this rule, or a new society should be formed, and called the Society of Contracting Architects.

Could "C. F. M." give further particulars of the methods adopted by the Co-operative Builders?—I am, &c., CURRENTE CALAMO.

THE LARGEST PARISH CHURCH.

SIR,—The discussion as to which may be entitled by maximum included area in square feet to be described as the largest, or by reversing the order to be considered the smallest, church in England is still going the rounds of certain contemporaries; therefore it may not be inopportune to open the question as to which is the most inconveniently arranged church, be it large, small, or medium sized.

I think that Oswestry parish church was on a par with St. Nicholas, Great Yarmouth, for defect of internal arrangement; very wide light aisles having swamped a narrow nave, the piers of which were close together, numerous, and large, when compared with the voids.

Happily the tower terminated one of the aisles (S.). The central arcade was eliminated, and the interior of to-day is convenient or commodious, and suited for the supposed requirements of worshippers in the 19th century—i.e., most people can see what goes on and hear something, if not all.

The including walls seem to have been retained. At Boston there is a very large church with very vigorous aisles and a very sickly nave and roofing. At Wrexham the beauty is all out of doors. The nave is too crude for description, and the chancel is a badly-connected afterthought, much on a par with the abandoned interior at Oswestry.

I do not claim to have been in Great Yarmouth for over a dozen years, and I have no plan of the parish church to refer to, but I think I may venture to say that for 1 for width of nave 1½ would represent each aisle. Now it may be laid down that "nave and one aisle" is the best for hearing and seeing on the part of the congregation, as the pillar obstruction interferes least.

Supposing the central arcade at Yarmouth is too substantial, or venerable, or interesting to be lost (which I doubt), I would suggest that the tower should be provided for elsewhere, and that the north aisle, &c., roofs should be re-erected over a central arcade, the north side of which should be set back to receive the north side of such transposed roof. This would widen the nave at the expense of the north aisle—perhaps the most suitable place for the tower would be at the west end of the north aisle—probably the present nave roof would suffice for re-roofing the

same. There is a large double organ which would sound well when raised to screen level in each transept; then the size of the church would not be quite such an encumbrance as it is at present.

An excellent example of nave and one aisle is that of St. Magdalene, Paddington (one of Street's). Another church of the same dedication in Munster-square has had a north aisle added; the beauty of the nave seems sadly discounted in consequence; yet, one could only long for the extra aisle and imagine something there, and feel that a pig with one ear is no improvement on the natural arrangement.

What is wanted is that the nave should not be inferior to its adjuncts; four or five equal aisles with one of them somewhat taller in the centre, as at Manchester (the area of which in feet might run Yarmouth close), or at Taunton, which is beautiful outside and in, only brings pity on the nave and a sense of unfitness, much as if the aisles had strayed away from some superior building and become attached inadvertently. I hope someone at Great Yarmouth will follow up with dimensions or remarks.—I am, &c.,

H. W.

CHIPS.

Mr. W. J. Gant, of Hastings, having taken into partnership Mr. C. H. Slatter, of Nottingham, the above named propose carrying on the business of architects and surveyors, at their offices, Havelock-road, Hastings, the style of the firm being "Messrs. Gant and Slatter."

A correspondent writes that, since the foundations were laid four years ago, no progress has been made with the museum for St. George's Guild, on the site in the Forest of Wyre, given by Mr. George Baker, of Bewdley. It is feared that Mr. Ruskin's Utopian project of founding a museum in the seclusion of Wyre Forest will come to nothing.

St. John the Baptist's Church, Broad-street, Bristol, was reopened on Sunday after internal decoration, designed and carried out by Messrs. Joseph Bell and Sons, of College-green, Bristol.

Mr. John Mossman, the Scottish sculptor, died at Port Bannatyne, near Glasgow, on Monday, in the 74th year of his age. Mr. Mossman, whose father was a pupil of Chantrey, was born in London; but his father soon after his birth moved to Leith, where young Mossman was educated. He was afterwards taken into the studio by the late Baron Marochetti, and rapidly gained a high reputation as a sculptor in Scotland. Many of the finest statues in Glasgow were executed by him, including those of Sir Robert Peel, Dr. Livingstone, and Thomas Campbell in George-square, those of Dr. Norman Macleod and Mr. Lumsden in Cathedral-square, while the memorial to Wilson the ornithologist, erected in the grounds of Paisley Abbey, deserves notice. Mr. Mossman's portrait, painted by Norman Macbeth, hangs in the Corporation Gallery of Glasgow.

Extensive building operations have just been commenced at Aldershot for the construction of new barracks in the South Camp, where the foundations are being made on the higher ground near the headquarter offices. In all nearly a million and a half is to be spent at Aldershot in the new structures and in rebuilding and enlarging the old barracks and huts, so that a much larger portion of the First Army Corps may be accommodated in the Camp than has hitherto been quartered there.

It is announced that Messrs. Mather and Platt, of the Salford Ironworks, have nearly completed the provision of electric and other machinery, including hydraulic elevators at each station, for the City and South London Electric Subway, which will be opened between King William-street, E.C., and Stockwell, it is now promised, "early next month."

At Watford a meeting of working men was held in the recreation ground on Saturday afternoon complaining that the School Board should have accepted a tender for new schools on the Fields from an outside firm. At a subsequent meeting of the School Board a petition five yards long, signed by working men of Watford, was presented, stating that the memorialists were of opinion that the contract for the schools should be confined to the town of Watford, as the local working men and the builders would be handicapped by a firm paying a lower rate of wages. The memorialists therefore hoped the Board would see their way clear to re-open the question by having the work tendered for again. After discussion, it was resolved that in view of the strong desire expressed the work should be kept within the town of Watford, and that Messrs. Waterman's tender as amended be accepted at £4,679, subject to the consent of the Education Department, and that the question of compensation to Messrs. Webster and Cannon (whose tender as originally accepted was £4,320) be left to the architect.

Intercommunication.

QUESTIONS.

[10387.]—**Windows.**—If my neighbour, who has four windows of irregular size overlooking my premises, replaces these by new ones, increasing the three smaller by a few inches to the size of the largest one, can I compel him to alter the windows to their original sizes, or what remedy have I? Can I also prevent him opening the new ones if the former were fixed casements?—J. W. SIMPSON.

[10388.]—**Nuisance from Chimney.**—A steam laundry has just been started at the rear of my house, and the smoke from the chimney and the steam, when the wind sets towards me, completely smothers my lawn, the smoke leaving smuts everywhere—on the window-sills and even in the rooms. It is, in fact, at times impossible to have the windows open. Will anyone kindly say whether I have any remedy? Can I compel the owner or occupier to abate what is a terrible nuisance and is materially damaging my property by reducing its value? I may remark that the neighbourhood is entirely residential, and, with the exception of this laundry, there is no factory within sight. The chimney is about 130ft. away.—J. M. J.

[10389.]—**Drainage.**—Will some reader kindly inform me (1) whether it is usual to provide both inlet and outlet ventilators to the main inspection manhole near intercepting trap, or should the outlet be placed at the highest point in the course of the drains? Is a soil-pipe at this point continued above roof sufficient for the outlet, or should the soil-pipe be trapped at foot and a separate ventilating pipe provided? (2) Is it advisable to provide gully-traps to rain water pipes which lead into rain-water tank?—SUBSCRIBER.

[10390.]—**Pointed Architecture.**—Has any work been lately published on the origin of Pointed architecture? How is the vast difference between the Norman and Early English arch accounted for, unless the interlacing Norman arches suggested the pointed arch?—SUBSCRIBER.

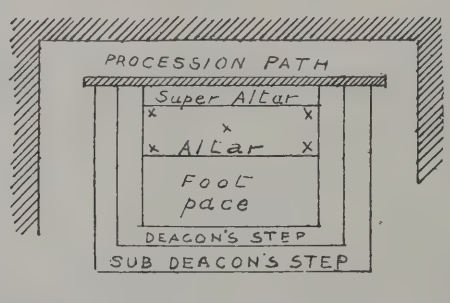
[10391.]—**Sussex.**—I shall be glad if some kind reader would let me know of some good cheap books on the churches of Sussex and Kent, and if any one knows the age of New Shoreham (Sussex) Church.—J. H. MASON.

[10392.]—**Churches.**—Can any of your readers tell me where I can find the best architectural and historical description of St. James' Chapel, Okehampton, Devon; and Saltford Church, Somerset?—J. E. P.

[10393.]—**Wood Block Flooring.**—I should be glad if any of your numerous readers would give me their opinion as to whether a wood block floor would be a suitable pavement for a public market hall, and if it could be effectually drained and cleansed, also made impervious? About how often would the paving require renewing? I am anxious also to ascertain if a market hall so paved could be used on other than market days for concerts, lectures, &c., without in any way being a nuisance or offensive—i.e., smells arising from paving? Could such a floor be used for dancing upon with success, or should a false floor be laid down for dancing? How should it be constructed so as to be readily laid down, and of what material, &c.?—C. W. S.

REPLIES.

[10354.]—**Steps to Chancel and Altar.**—The distance from the Communion-rail to the east wall of chancel would, of course, depend largely upon the size of altar and the arrangement of the reredos or baldachin. If it is intended to have a procession path behind the altar, 17ft. would be a good space, allowing 3ft. for path, 3ft. 6in. for altar, and 5ft. from riser of sub-deacon's step to rail; but circumstances alter cases. One can lay down no hard and fast rule. The arrangement of the approach to the altar must be governed by the whole building, and be a proportion of the whole mass. This applies to the minutest detail, much more so to the appointments of the chancel, which is the focus of the whole building. There should be three steps within the rail—one for the sub-deacon, one for the deacon, and the highest, called the



foot-pace, for the celebrant. It is a very common error to have this too narrow, and thus retard the movements of the priest—it should be 2ft. 6in. wide at the least. The accompanying sketch shows an arrangement that is generally found convenient.—FRED. R. W. MAYER.

[10362.]—**Fire-proof Floor.**—Mr. Christie, in his reply to the query of a correspondent, in your issue of the 19th., says that the most effective plan of preventing transmission of heat (in case of a conflagration) is to use a non-conductive material—such as asbestos or slag wool;—that, unlike concrete or brick, they yield to the expansion of iron in the event of the latter becoming hot, and are better non-conductors than air spaces; and that an experiment made with wood joists, covered with an inch in thickness of slag wool, backed with ordinary plaster, proved they were effective against fire. These statements are in direct opposition to the experiments made by others—for instance, Mr. Hyatt, who made a number of practical tests with the same object, says in his book, page 19: "The synchronism existing between the expansion of the two materials—concrete and iron—whatever the size of the metal, was thus placed beyond question; and in respect to this (expansion under great heat) the two materials may be regarded as practically homogeneous." And again on page 20: "The result of all being that the best material to protect metal against heat was found to be that which was strongest in compression—viz., Portland cement concrete of best quality, *no advantage for any purpose being found from fibres of any kind, not even asbestos.*" It is very desirable to know definitely what general principles are best to adopt in fire-proof construction, as conflicting advice and opinions tend to want of confidence. My own experience is that an inch or more of asbestos is a protection against fire for some time; but that the heat before long penetrates, and the asbestos is practically no longer of any service. As a covering to steam boilers, for which purpose it is very largely used, the conditions are different, and the heat is retained for a very long time; even then it requires to be not less than 2in. thick.—THOMAS POTTER.

[10383.]—**North Devon.**—There are the following churches near Ilfracombe, which are worth seeing. Braunton has a splendid series of ancient carved bench-ends, also some 17th-century oak-carving in gallery, pulpit, &c. Morthoe has a 14th-century tomb and some fine bench-ends; and both Georgeham and Heanton have interesting features. Barnstaple possesses a great number of Jacobean monuments; and close to the town is Pilton, with a magnificent screen; and in an out-of-the-way part is Marwood, with another beautiful screen and loft. Combemartin has also a fine screen; and Berry-narbor, East Down (Late screen), and West Down are all worth a visit. Ilfracombe Parish Church is itself an interesting one, with a good roof; and if Clovelly is made the object of an excursion, the church there, which has Norman portions and some good brasses, should be seen. Still further in that direction, near Hartland Point, is Stoke St. Nectan's, with a tower 126ft. high, a stone altar, and a glorious wood screen. Northam Church has a few interesting details; Bideford is modern; Tawstock (three miles from Barnstaple) is a fine church, with a good screen and handsome old monuments.—L. A. F.

[10386.]—**Charges for Laying Out Building Land.**—In reply to "G. A. H." I should advise him to make an arrangement with his client. The skill required and trouble ought to be the principal considerations in every case. If the plan consists of merely dividing the land into suitable plots, "G. A. H." may make a charge on the number—that is, charge a fair percentage on the ground-rents, say, from 2½ to 5 per cent. Several hundreds of acres would represent a large number of plots for letting, and it would compensate the surveyor if he were to charge a moderate percentage on the total ground rental, say, 1 to 2 per cent. For letting the plots it is customary to charge a whole year's ground-rent. "G. A. H." may be employed to let and to inspect the buildings during their erection, to see that the covenants are complied with, and to certify for lease; if he is, a small percentage would pay him for laying out. A fair way of charging is to keep an account of the time and labour expended and charge per day.—G. H. G.

LEGAL INTELLIGENCE.

ASSAULTING THE FOREMAN.—A joiner, named Pointer, living at Dagmar-terrace, Islington, was, on Tuesday last, summoned to appear at Clerkenwell Police-court for assaulting John Foot, a foreman in the employ of Messrs. McCormick and Sons, builders, at Canonbury road, N. Foot being dissatisfied with the amount of work done by Pointer, sent him to the yard, and Messrs. McCormick, having had other complaints of his idleness, discharged him; whereupon he went back and assaulted the foreman Foot. He was sentenced to pay 40s. fine or go to prison for one month.

Alterations have been made to the district Lunatic Asylum, Killarney, including the ventilation, which is now carried out on the Boyle system, the extraction of the vitiated air being effected by the latest improved form of the self-acting air-pump ventilator.

The Commissioners of Woods and Forests have given authority for the erection of a bronze equestrian statue of the late Lord Napier of Magdala in the centre of the roadway in Waterloo-place, between the United Service and Athenæum Clubs. The statue is being executed by Sir Edgar Boehm, R.A., and will be finished before the end of the year.

Important and extensive works are now in progress in connection with the widening of the Great Western Railway between the Reading and Didcot junctions, in continuation of similar works carried out between Paddington and Reading. The present Moulsford Station is to be demolished, and a new station will be erected somewhat lower down the line. The contractors are Messrs. Lucas and Aird, of Westminster, and Mr. Lovett, of Wolverhampton.

The Llandudno Improvement Commissioners considered at their last meeting a report from the committee appointed to inquire into the proposed rearrangement of the duties of the officials. It was recommended that Mr. T. T. Marks at present should be relieved from indoor work, and be appointed engineer and surveyor at an increased salary and a five years' engagement. It was pointed out that since 1876, when Mr. Marks was appointed clerk and engineer, the rateable value of the town had increased 60 per cent., while the increase in salaries had been but £50. The section dealing with the separation of offices was adopted, and the rest of the report was referred back to the committee.

STAINED GLASS.

EDINBURGH.—A stained-glass window to the memory of the late Mrs. Cameron Lees has just been placed in the nave of St. Giles's Cathedral. The memorial window is that above the session-house on the west side of the north transept. The window—a three-light one—is divided by a transom into an upper and lower half, the compartments of which are filled with figures symbolical of Christian virtues. In the upper half the figures are those of Faith, Hope, and Charity; and in the lower half those of Truth, Justice, and Mercy. In the tracery are a scroll, with the motto, "Gloria in Excelsis Deo," a cross, and two angelic figures with scrolls. The inscription runs in double lines under the figures in both divisions of the window. The window is by Cottier, of London.

ANTRIM.—One of the old windows of the parish church at Antrim, which dates from 1598, has been filled in with stained glass by Viscount Massereene in memory of his mother. The window is a three-light one, the centre compartment containing a figure of our Lord, and the side lights being figures of St. John the Divine and St. John the Baptist. Underneath the window is a memorial brass bearing an inscription. The work has been executed by Mr. Aldam Heaton, of Bedford-square, London.

STATUES, MEMORIALS, &c.

ADEL, LEEDS.—A memorial has just been erected in Adel Churchyard to the late John William Inchbold, the well-known artist and poet. It has been designed by his cousin, Mr. Richard Mawson, architect, of Bradford, and is founded on an Early Fourteeth-century cross from St. Cirques, in Auvergne. The base is a block of white marble, placed on a plinth; from it springs the shaft, also in white Sicilian marble. At the intersection of the cross, where on the original is a representation of the Virgin and Child, there is carved a wreath of passion-flowers. A shield is placed in the centre of the shaft, with the monogram, "J. W. I." On the base of the shaft is an inscription; on the north side is a memorial sonnet written by another of his friends, Mr. Dennis, whilst on the south is his own exquisite sonnet to Art from the "Annus Amoris." The execution of the work has been intrusted to Messrs. Farmer and Brindley, of Westminster.

WATER SUPPLY AND SANITARY MATTERS.

CLECKHEATON SEWERAGE.—The Local Board of Cleckheaton have called in Mr. W. H. Radford, C.E., of Nottingham, as consulting engineer to report on a scheme of sewerage and sewage disposal prepared for the board by Mr. J. C. Haller, C.E., of Rotherham. The estimated cost of the scheme is £20,000.

WHITCHURCH, SOMERSETSHIRE.—The Keynsham rural sanitary authority have instructed Mr. A. P. S. Cotterell, C.E., of Bristol, to report upon a scheme of sewerage to the village of Whitchurch, within their district.

CHIPS.

Lady Wimborne opened at Poole on Wednesday a gymnasium and museum, which have been presented to the town by Mr. John Joseph Norton, who three years ago gave a free public library in commemoration of the Queen's Jubilee. The present building has cost about £5,000.

Earl Cowper has erected a new church at Selston Notts, which will be consecrated on Monday next, the 29th inst., by the Bishop of Southwell.

The School Board for Swindon have adopted plans by Mr. Brightwen Binyon, of Ipswich, for new schools at Westcott.

A monument to the late Dr. Currie, of the Church of Scotland Normal School, Edinburgh, has just been erected in Warriston Cemetery by public subscription. It is an obelisk, of Peterhead granite, and consists of three pieces—base, dado, and spire. The monument (8ft. 6in. high and weighing about four tons) has been executed by Mr. Calder, Heriot Hill, Bellevue.

Colonel S. Bevington laid the foundation stone of the new building for Bacon's school, Bermondsey, on Thursday, the 18th inst. The cost of the edifice, which is being erected by Mr. Gerard, from plans by Mr. Gale, will be about £3,300.

Dr. Campbell, the late Bishop of Bangor, has been presented with his portrait on retirement from the episcopal chair. The portrait is the work of Mr. J. J. Shannon, and represents Dr. Campbell clad in his episcopal robes and seated in his study.

The foundation-stone of new Sunday-schools and parish-room for St. Peter's, St. Alban's, was laid last week by Lady Jane Grimston. Mr. F. W. Kinneir Tarte, M.S.A., of Furnival's Inn, E.C., is the architect.

Our Office Table.

IT is reassuring to learn from a letter by Mr. Henry Stanier, the British Vice-Consul at Granada, that all that was burnt in the disastrous fire at the Alhambra on the 13th inst. can be restored, except the ceiling of the Sala de la Barca and the beautiful colouring on its walls. The fact that the palace was on fire, when he first saw it, in three distinct places convinces Mr. Stanier that it was the work of an incendiary. By some judicious cutting in the roofs the fire was prevented from extending to the Court of Lions and the Hall of Ambassadors, and was confined to the Court of the Alberca, and this court, having a large tank of water in the centre, enabled the fire-engines to have an abundant supply, and by 2 o'clock the fire was localised to the Court of the Alberca and the Sala de la Barca. The roof of this hall has been entirely burnt, but its walls are intact, although calcined, and the beautiful colouring disfigured. The gallery at one end of the Court of the Alberca has also had its roof entirely destroyed. This and some rooms extending all on one side of this court form the total of the parts burnt. The Court of the Lions and all the other courts and halls are intact, and have not suffered in the slightest degree. It is a miracle how anything has escaped, for the fire was most intense, but the immense thickness of the walls of the Tower of Cemares prevented the fire extending to the Hall of Ambassadors, and the cutting away of the roof prevented its extending to the Court of Lions.

PROFESSOR ROGER SMITH will give a public lecture on the Technical Education of Architects, at University College, on Thursday evening next, the 2nd of October, at 7.30 p.m. He will, in the course of the lecture, criticise the "Curriculum" issued by the committee appointed for that purpose by the Architectural Association. With this lecture the courses of lectures on "Architecture, Construction, and Practice" at the college begin. These courses are three in number, dealing respectively with Architecture as a Fine Art, and as a Science, and with Modern Practice.

THE sixty-eighth session of the Birkbeck Literary and Scientific Institution, Bream's-buildings, Chancery-lane, will open on Wednesday next. About 200 classes meet weekly in commercial and technical subjects, mathematics, natural, applied, and mental science, languages, history, literature, art, music, law, &c., &c. Special classes are arranged for university, civil service, and other examinations. The classes are open to both sexes. During the past session the students have met with their usual great success at various competitions. On Wednesday evenings lectures will be delivered in the large theatre of the institution. Amongst those who are already engaged may be mentioned, Sir Robert S. Ball, Dr. Dallinger, Mr. Samuel Brandram, M. Max O'Rell, Mr. Clement Scott, Dr. Rentoul, M.P., Mr. Charles Dickens, Mr. J. T. Carrodus, Mr. Fred Villiers, and Mr. John Thomas.

MR. G. F. LYSTER, the engineer of the Liverpool Docks Board, having, owing to advancing years, intimated that he desired to be relieved of a portion of his work, a committee recommended a rearrangement of the duties which will enable the engineer to retain his position at a salary of £3,000 instead of £4,500, which he is at present receiving, some portion of the general management and supervision of the works being delegated to his son, Mr. A. G. Lyster, whose salary will be increased from £500 to £1,500, while the salary of Mr. W. Le Mesurier will be raised from £850 to £1,000. In bringing this report before the Docks Board, the chairman of the committee repudiated the idea that in making the changes proposed there was any intention to prejudge the question of succession to the chief office in the event of Mr. G. F. Lyster's retirement or removal by death. Having regard to the responsibility of the trust reposed in them, the committee would "go for the best man," and Mr. Lyster, jun., would take his chance with the other aspirants to the post. The consideration of the proposal has been deferred for a week, but it is morally certain to be adopted.

THE death is announced, at the age of 83 years, of Mr. Thomas Nelson, of Friars Carse, Dumfriesshire, for many years engaged in business in Carlisle as a builder and railway contractor. He owned large marble works there, and was Mayor of the city for several years. He constructed the Silloth and Carlisle Railway and Dock, and executed much work of a similar character for the North-Eastern and London and North-Western Railway Companies. In partnership with his sons he also made a dock at Cardiff. About 20 years ago he purchased the Friars Carse estate, upon the banks of the Nith, near Dumfries, and the Hermitage, in which Burns wrote some of his poems. Mr. Nelson made a valuable collection of Burns's manuscripts and other relics, including a pane of glass upon which the poet had scratched some verses in the Hermitage.

MR. T. C. SMALES, architect, who died recently in St. Joseph, Missouri, had gone through many vicissitudes in his short career. He was born in England about forty-five years ago, and began life as an engineer officer in the British army. Twenty years ago he went to America, and bought a farm of a thousand acres in Minnesota, which he stocked and carried on for several years. He was elected to the Minnesota Legislature, and served one or two terms. Becoming tired of raising cattle, he sold his farm and opened a banking-office, but was unfortunate, and soon lost all his property. He then went to St. Louis, and entered an architect's office as a student, and about ten years ago appeared in St. Joseph as an assistant in the office of Messrs. Eckel and Mann, architects. Three years later he commenced practice on his own account, and was popular and successful, having been recently appointed architect of the public schools.

MEETINGS FOR THE ENSUING WEEK.

THURSDAY.—University College, London. Classes of Architecture. Free Opening Lecture, by Professor T. Roger Smith. 7.30 p.m.

FRIDAY.—King's College, London. "Architecture: the Pleasure Derived from its Study," by Professor Banister Fletcher. Free Opening Lecture. 8 p.m.

Architectural Association, 9, Conduit-street, W.—The opening Conversazione will take place on October 3, at the Westminster Town Hall, at 8 p.m.

FRED. FARROW. } Hon. Secs.
ERNEST GALE. }

The Local Board of Cleckheaton have called in Mr. W. H. Bradford, C.E., of Nottingham, as consulting engineer, to report on a scheme of sewerage and sewage disposal prepared for the board by Mr. J. C. Haller, C.E., of Rotherham. The estimated cost of the scheme is £20,000.

The county council of Wigtownshire have raised the salary of their surveyor, Mr. Goodwillie, from £160 to £200 per annum.

Surveyors are now engaged in taking levels in the Eccleshall section of a proposed new railway from Stafford to Market Drayton. It is stated that the route will be quite independent of the present North-Western line, and will be viâ Chebsey, Eccleshall, and Croxton. A Bill in connection with the scheme will be presented to Parliament next session.

The parish church of Marbury, Cheshire, is about to be restored, in accordance with plans and report made by Mr. John Douglas, of Chester. The works will include the strengthening of the tower, the placing of a new roof in oak over nave and aisles, reseating the building throughout in oak, and opening out the tower arch, together with the removal of the west gallery. The estimated outlay is £2,000.

In memory of the late Rev. Alex. Lawson, who for sixty years—from 1815 to 1875—officiated as parish minister at Creich, N.B., a stained-glass window has been presented to the church and parish by relatives of the deceased. The window, which has been designed and executed by Mr. Nathaniel Bryson, Leith-street-terrace, Edinburgh, is Gothic in character, and measures 12ft. from sill to apex. In one of the lights there is a figure representing John the Baptist, and in the other St. Paul, while the tracery contains a portrait of the deceased clergyman.

The public rooms at Newtown, Mont., are now in the hands of Messrs. Edward Davies and Son, builders, who have undertaken some important structural alterations. The plans were prepared by Col. Walker, of Liverpool. It is intended to enlarge the chief rooms to 79ft. by 39ft. and 28ft. high. On the ground floor will be, besides this large room and the post-office, the court (remodelled for Assize and other business), counsel's robing and grand-jury rooms. On the upper floor will be a large banqueting-room, and on the west side a kitchen, scullery, and petty-jury room, &c.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

Ashford, Kent.—For an additional class-room to the board schools. Mr. H. J. Jeffery, M.S.A., architect:—

Baker, W.	£310 0 0
Wood, J.	298 0 0
Davis and Leney, Goudhurst	293 0 0
Steddy and Co. (accepted)	290 0 0
Trevers, E., Deal	280 0 0

Rest of Ashford.

Beddington.—For first portion of new flour-mill at Beddington, Surrey, for Messrs. J. and T. H. Wallis. Mr. H. T. Bonner, A.R.I.B.A., 29 and 30, King-street, Cheapside, E.C., architect. Quantities supplied:—

Chappell, Pimlico	£2,300 0 0
Jerrard, Lewisham	1,925 0 0
Spencer and Co., Lambeth	1,920 0 0
Holloway, Deptford	1,900 0 0
Page, Croydon	1,895 0 0
Humphries, Sutton	1,810 0 0
Smith and Son, Norwood	1,793 0 0
Taylor, Croydon	1,762 0 0
Trappitt, Beddington (accepted)	1,700 0 0

Bristol.—For erection of two semi-detached villas, Woodstock-avenue, Alexandra Park Estate, for the Bristol Capitalist Association, Ltd. Mr. A. Barratt, Somerset Chambers, Corn-street, Bristol, surveyor:—

Morris, D.	£1,100 0 0
Love, E.	1,065 10 0
Podger, W.	1,045 0 0
Tambling, A. (accepted)	940 0 0

Belgravia, S.W.—For new top story and contingent works at No. 49, Eaton-terrace, S.W. Mr. J. Emes, 151, Ebury-street, S.W., architect:—
Bowden, C., and Co., Eaton-square, S.W... £240

Bristol.—For the erection of two semi-detached villas, Rokey-avenue, Alexandra Park Estate, for the Bristol Capitalist Association, Ltd. Mr. A. Barratt, Somerset Chambers, Corn-street, Bristol, surveyor:—

Morris, D.	£1,200 0 0
Podger, W.	1,030 0 0
Love, E.	998 10 0
Tambling, A. (accepted)	960 0 0

Caterham.—For erecting four pairs of cottages, for Mr. W. Smith. Mr. F. Elliff, Caterham Valley, architect:—

	A.	B.	C.
Ward, Caterham	£395	£9 10 0	£1,618
Waddington & Co., Ltd., Sydenham	395	5 0 0	1,600
Harman, Caterham	384	6 0 0	1,536
Scrivener, Caterham	326	4 5 0	1,321

A.—For one pair. B.—Extra bays. C.—Total, four pairs.

Dalston.—For alterations at the Albion Tavern, Albion-road, E., for Mr. A. Sanderson. Mr. W. G. Shoebridge, 158, Strand, W.C., architect:—

Walker Bros.	£324 0 0
Hackett	295 0 0
Turtle and Appleton	293 0 0
Taylor and Son (accepted)	279 0 0

Pewtering, &c.:—
Paddon, Kingsland, N. (accepted).

Fulham.—For sewer, Munster-road. Mr. J. P. Norrington, surveyor:—

Jones, S., Harlesdon	£4,258 0 0
Killingback, C. W., & Co., Camden Town	3,890 0 0
Nowell and Robson, Kensington	3,575 0 0
Bottoms, L., Upper Tooting	3,550 0 0
Fell, J., Leamington	3,550 0 0
Tomes & Wimpey, Hammersmith	3,290 0 0
Rogers, E., and Co., 3, Chesterton-road, W.	3,200 0 0
Cooke, B., and Co., Battersea	3, 85 0 0
Neave, W., and Son, Paddington	3,071 0 0
Mears, J., South Kensington	2,950 0 0
Neave, J. H., 54, Fulham Park-gardens, S.W.	2,894 0 0
Mayo, R., Ltd., Brixton	2,245 0 0
Saunders, S., Fulham	2,125 0 0

Greenwich.—For alterations at the Loyal Briton, Horseferry-road, Greenwich, S.E., for Mrs. Brookes. Mr. H. T. Bonner, A.R.I.B.A., 29 and 30, King-street, Cheapside, E.C., architect:—
Bridel, H., Greenwich (accepted) ... £310 0 0

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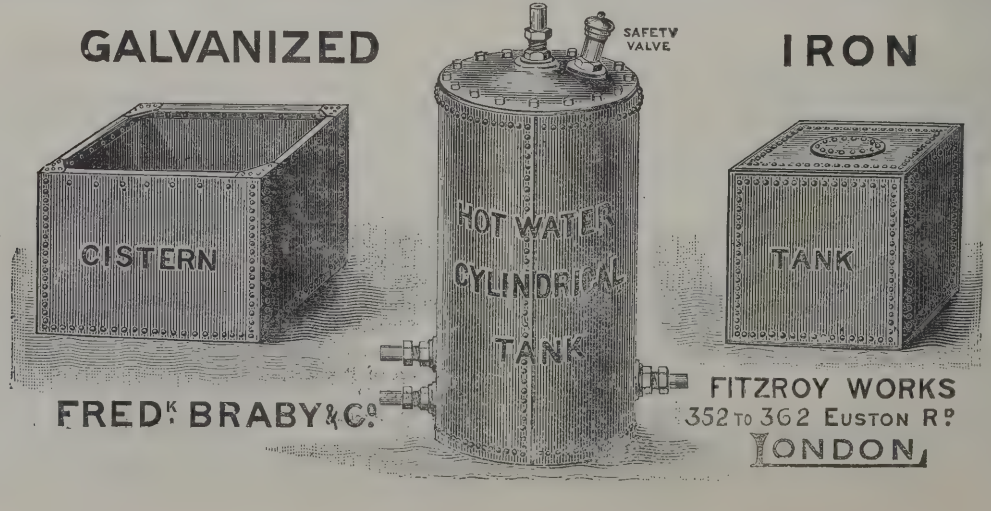
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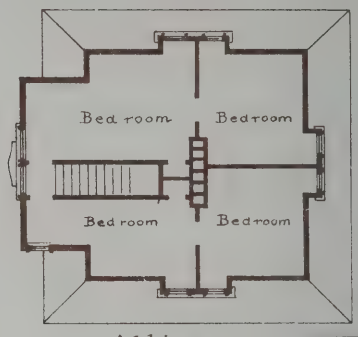
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Ground Plan



Attics

(HALF SCALE)

Side Elevatio

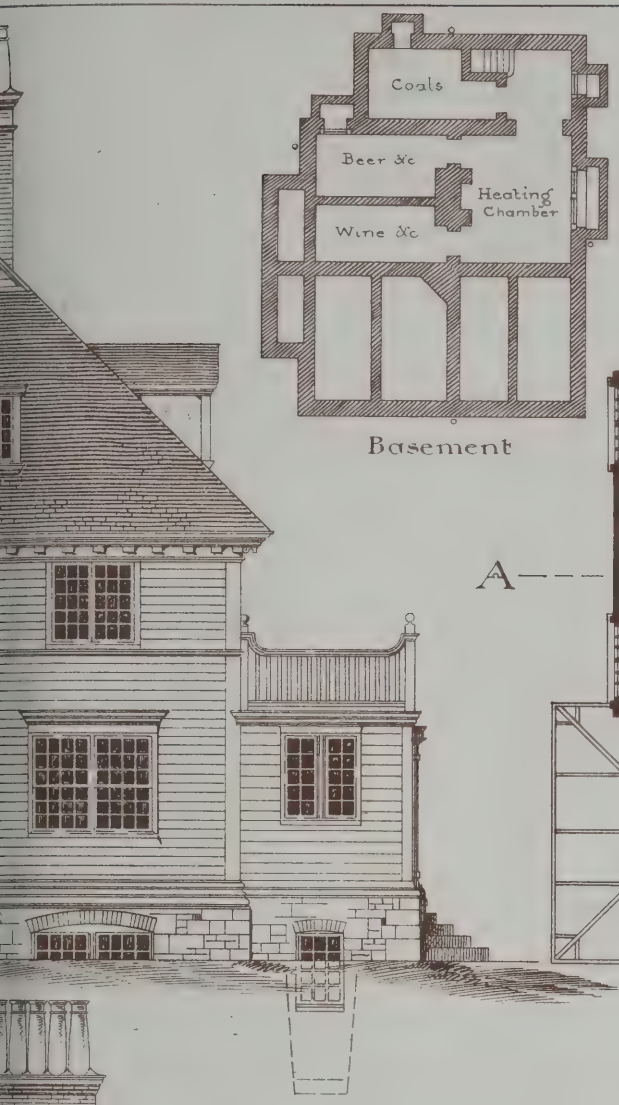
Sketch



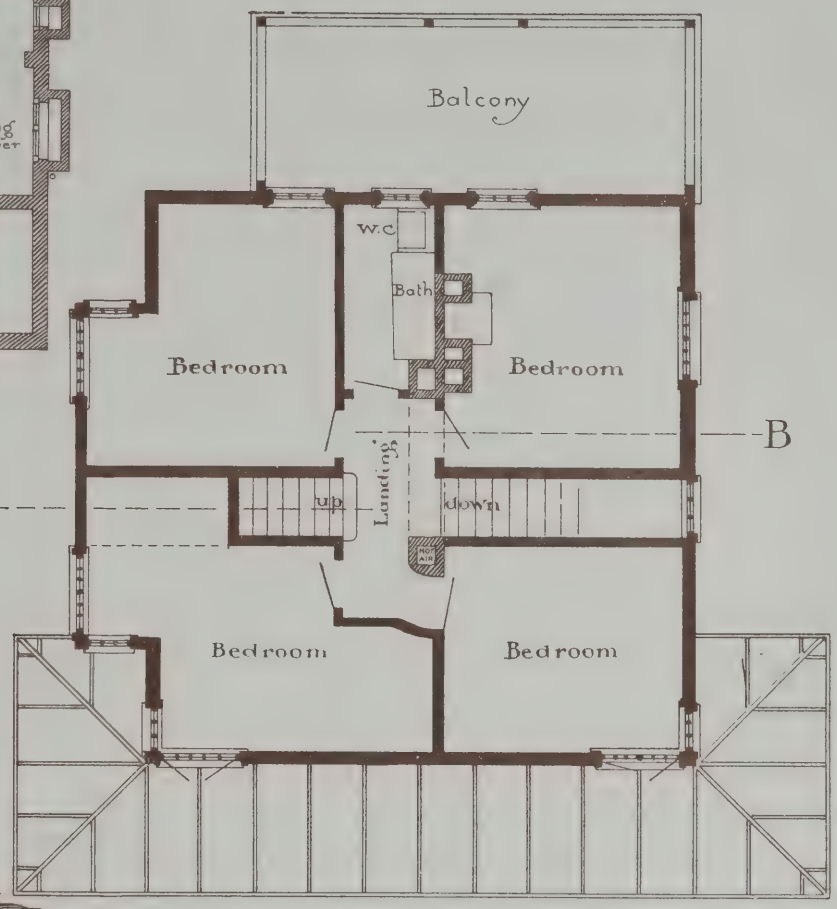


Entrance Front

Scale of Feet



Basement



First Floor Plan

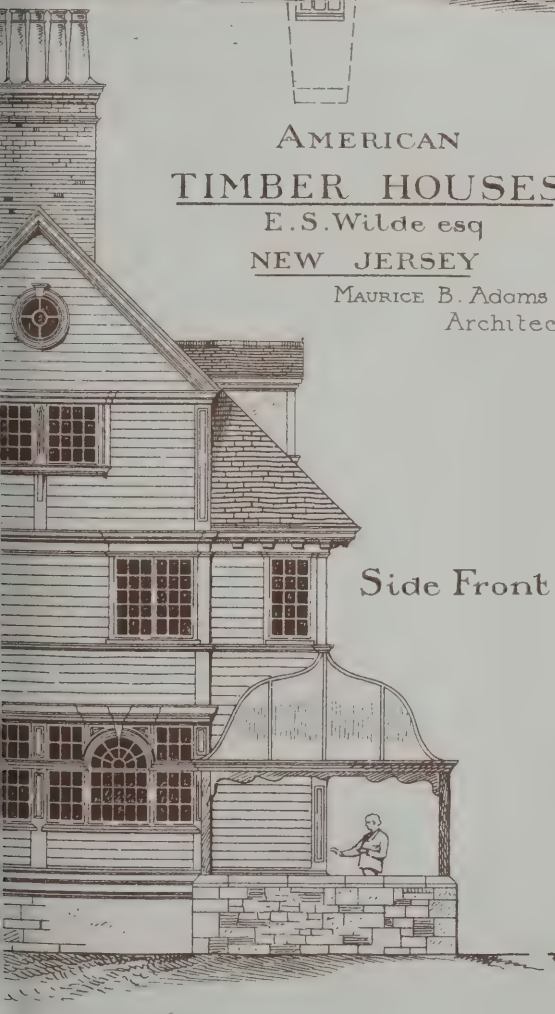
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TIMBER HOUSES

E.S. Wilde esq

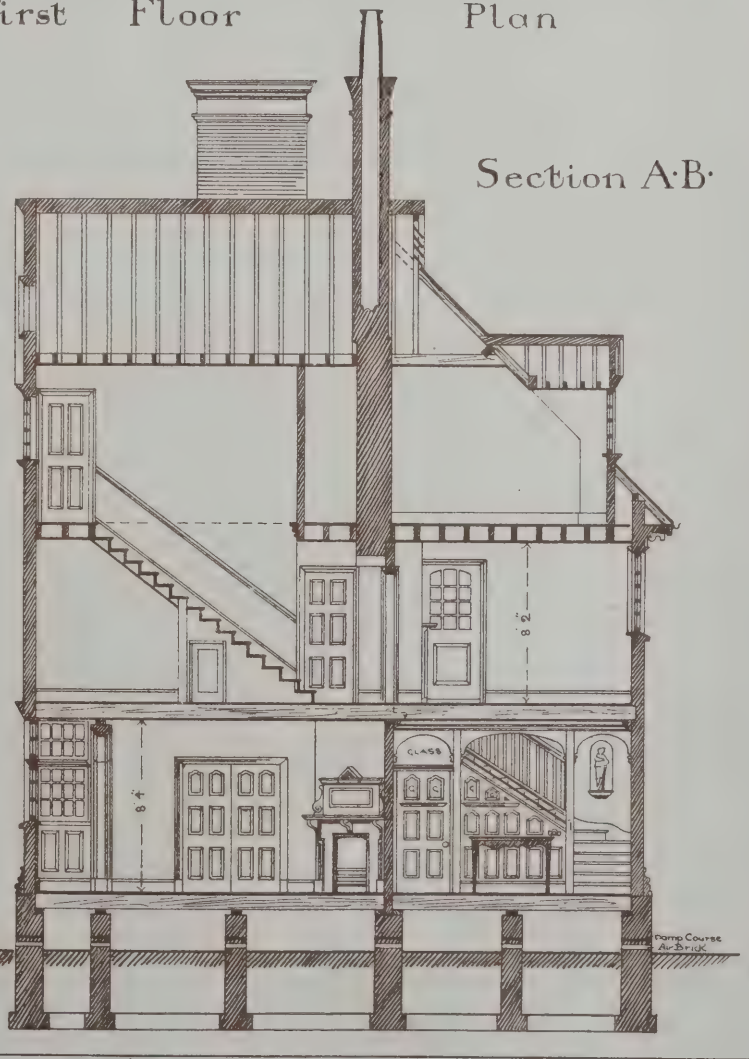
NEW JERSEY

MAURICE B. Adams F.R.I.B.A.
Architect



Side Front

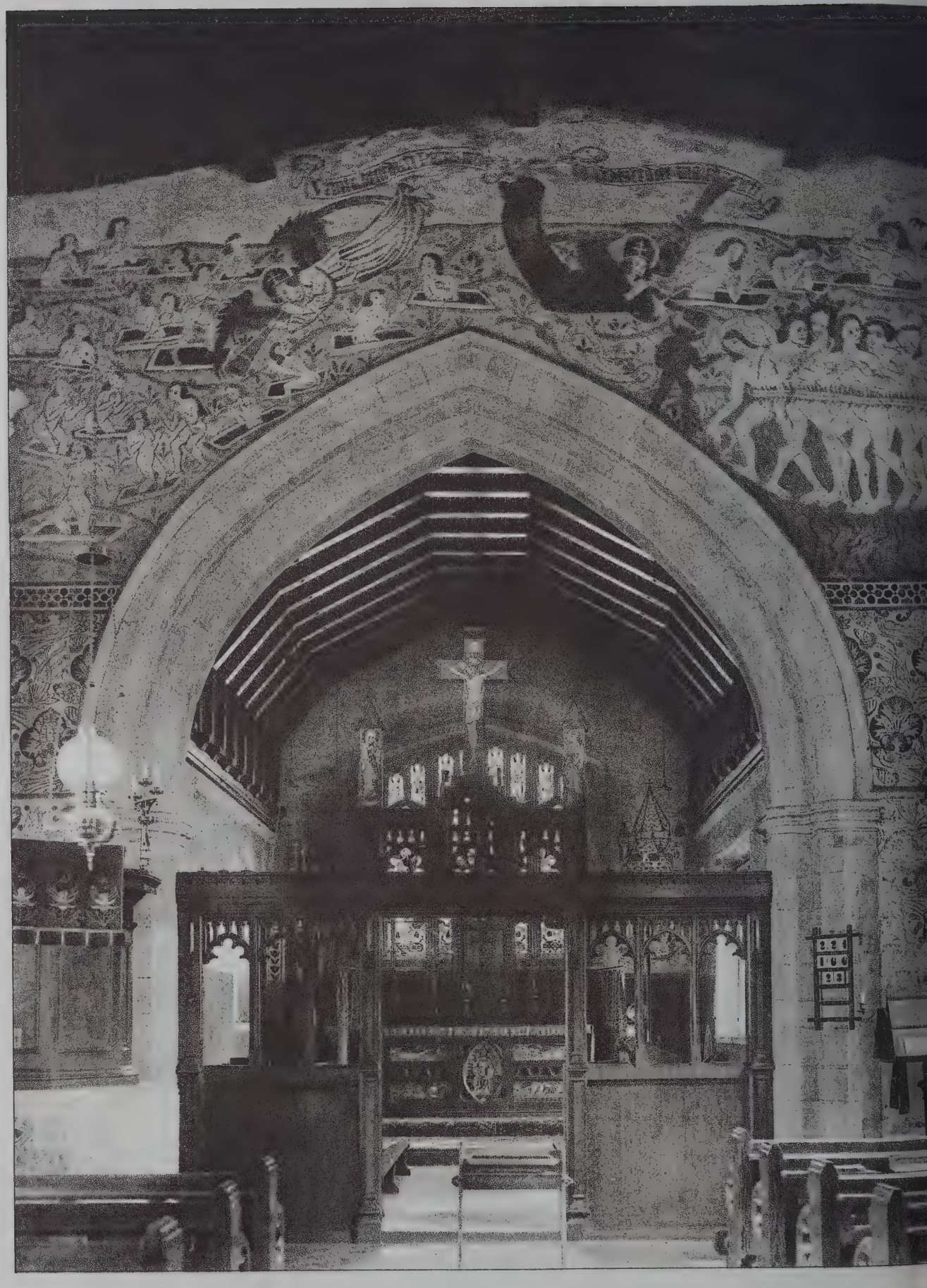
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SOUTH LEIGH CHURCH OXON · THE CHANCEL

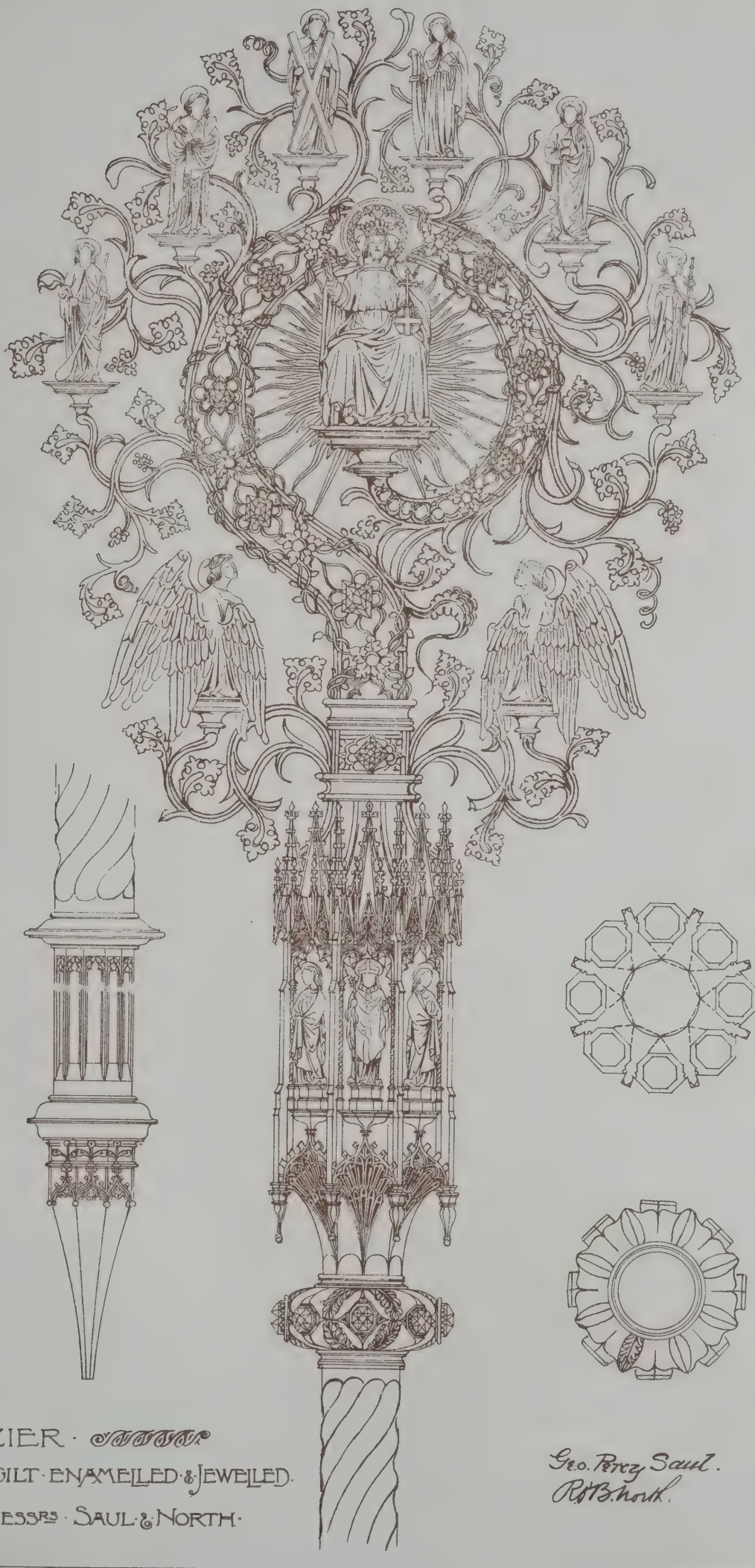
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LLIS.

BURFORD·CHURCH·OXON· THE·PRIORY·CHAPEL·



CROZIER.

SILVER-GILT ENAMELLED & JEWELLED.

BY MESSRS SAUL & NORTH.

Geo. Percy Saul.
R. T. B. North.

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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LIX.—No. 1865.

FRIDAY, OCTOBER 3, 1890.

THE PROFESSION AND THE BUILDING TRADES.

CO-OPERATION between architects and the building trades implies a few sacrifices on each side and a clearer perception of the duties of each class. We hear it often said that there is no sympathy felt by the builder for the work he is engaged upon, it is simply a matter of business with him, while the architect in the like manner practises his profession in much the same spirit as an agent who gets paid by commission for what he does. When we find such advertising "puffs" as those with which we have amused our readers for a week or two past, it is not surprising that the business transaction in its purely mercenary character is the sole motive of a few at least in the profession. To such men the art of architecture is the preparation of so many schemes, *alias* drawings, for a certain commission, or the rendering of services the value of which is not guaranteed. Little interest or sympathy is to be found among practitioners of this class, for their main object is to catch as many clients as they can, and to get through the business as soon as possible. Professional skill or high art can never be dispensed or ground out in this mill-like fashion; but he who endeavours to score a victory, or to make every commission he receives a means of mastering a new problem, or adding to his reputation, can alone achieve success. The "contracting architect" is a creation of the spirit to which we are alluding. Not being able or competent to win a place in the profession, he assumes the rôle of contractor, and seeks to unite the two businesses. What wonder if we hear of contracting companies starting which will guarantee everything necessary, the architectural design, plans, and superintendence included, the contractors employing architects, or *vice versâ?* There are many calling themselves architects, who are willing to undertake contracts, by carrying out the work themselves, or employing builders to do so. Co-operation, we imagine, of this sort, is not very likely to enlist the favour of the discerning public. It is merely rolling architect and contractor into one for the sake of doing a big business, and securing both the architectural and building branches. A correspondent suggests, ironically, a society to be called the "Society of Contracting Architects," and the Co-operative Builders, we believe, undertake work on similar lines. The weakness of this combination would be that the design would be "supplied to order," and become subservient to the cost. The interests of architect and contractor would be identical, and we know which is likely to suffer the most—the design or the pocket. Whether an architect undertook the contract, or the builder undertook to furnish designs, the identification of interests would lead to the same results. We can imagine what the effect would be if an employer or a committee wished to build. A design would be submitted to cost a certain sum. What security would the employer have that the same design or specification had been adhered to, if the contract amount was found to be inadequate? But it is needless to point out the one-sidedness of a contract of this sort. No; co-operation in the building trades is not a combination of architect and contractor. Co-operation, to be of real value to the trades and to the employer, must proceed on different lines. First, there ought to be sympathy between the profession and the building trades; and, second, there ought to be co-operation between the trades themselves. Neither of these conditions prevail. As we have before affirmed, the building trades hold aloof from the architect, because they have no immediate concern with him: they are bound under a contract, they work under a middleman. Craftsmen under him have little common interests; they are machines, and have no voice in each others' labours, as the tendency of competition is to dissociate—to encourage one workman to encroach on another and to underbid him. These are serious impediments to building co-operations. The ancient trade guilds supply us with a model of the system which we desire to see inaugurated. In the first place, excellence of craftsmanship was maintained by a sort of hereditary training or apprenticeship. In this way the knowledge or mystery of the trade was transmitted through master and pupil. In due time the apprentice became a master, and rose into the higher grades of the craft. Certain privileges were secured to him, the workman, instead of having to fight his way through the ranks of untrained workmen, became a member of a fraternity of a certain grade, privileges were accorded him from the Corporation of the City, and he rose to be a respected member of his craft. How different to the building craftsmen of to-day, who have to fight their way single-handed against the rank and file of unskilled and imported labour, who are scarcely recognised, and who have no provision for illness or old age. Trade-unions have, to a certain extent, supplied these benefits, and their advantages are chiefly on this ground to be valued; but they do not secure all that the workers require; they do not, for instance, guarantee the efficiency of the craftsman which was the main object of the guild. We have therefore to look for a revival of the old corporate principle under new conditions. By limiting the number of subscribers to the unions on the principle of restricting the supply of labour, rather than that of securing competent workmen, a vast number of good workmen are placed in a position of hostility to the unionists. The whole body of craftsmen in a particular branch ought to lay down the rules, and we have in the recent organization of the Plumbers' Company and the registration of plumbers a good example of the revival of the old system. What we require is the extension of the same action to other building trades. If bricklayers, carpenters and joiners, masons, smiths, plasterers, and other trades were to co-operate to secure a supply of skilled labour, the present chaos in the trades could not exist much longer, and contractors would be obliged to engage workmen who have been well trained for their contracts, just as many water and gas companies require their work to be done by hands who are skilled and who agree to comply with certain rules.

The profession and the building trades can do much between them to ameliorate the present condition of affairs; they can agree to work together under certain conditions and frame rules for their own guidance. There would not be so much encroachment on each branch if architects agreed together not to let their work to irresponsible builders, to accept fair tenders for contract work, and to prepare contracts that should not endeavour to overreach or take undue advantage of the contractor; and, on the other hand, if builders agreed not to undertake any work unless a proper set of drawings and specifications were prepared, and a fair contract be drawn up. The terms of a model contract in which the requirements of employer and architect, and also of the contractor, should be studied, and both have means for redress provided, is one of the essential things demanding attention from architects and contractors. A few general rules forming a code on each side would bring both classes into more agreeable relations. Let us mention a few. Plans submitted for competitive tenders should be drawn to a good scale, not less than one-eighth of an inch to the foot; they should be inked in, and every portion of the building should be shown, and details of any particular parts furnished. As to specifications, they should be full, clear, and written in ink. The quantities should be prepared from them, and their correctness guaranteed. Referring to underletting, we believe it would be a benefit to the contractor and to the trades generally, if it was permitted under certain conditions, one of these being that the sub-contractor would be held liable under the terms of the contract. Whether he should be under the general contractor or not is a question that might be left to circumstances. The contractor ought to be allowed a percentage on all sub-contracts. On the contractor's side it may be agreed that the contract price having been based on sub-contracts, the lowest bidders should be awarded the work. Some of these rules are introduced in the code prepared by the National Association of Builders of the United States, and are well worth the attention of builders in this country. The great division of labour that now exists renders it almost out of the question for the architect to engage special craftsmen for each branch of the work in a large building, as was the practice in the old times, or even to invite a number of contractors. But as specialism is the order of the day, why should we not boldly recognise the fact by subdividing the contracts into leading trades, or by allowing the general contractor to sub-let. No doubt it will be said the labour entailed in preparing separate contracts and specifications will be more than the ordinary architect would care to undertake, yet it is a method that cannot fail to insure the best results, as the architect would be "in touch" with each craftsman, and could make his meaning known to him better. We do not say that in every case of building this method would be desirable, but in many the division would be beneficial, and would check the multiplication of small contractors who now undertake all the branches.

HYDRAULICS OF FIRE STREAMS.

THE efficiency of the means of extinguishing fires is a branch of hydraulics not so much studied in this country as it deserves to be. No doubt in London, Manchester, Birmingham, and some other large towns, it is well understood; but in the great majority of towns we believe it is much neglected. Not so in America. There the best conditions are desired, which can only be determined by elaborate experiments. To this end numerous and well-devised tests have been made by Mr. John R. Freeman, M.Am.Soc.C.E., relating to the hydraulics of fire streams, not one item of which seems to have been unnecessarily observed. The report in which these experiments are recorded extends to 180 pages, with a great number of diagrams, plates, and tables for practical use. In reading these it is necessary to remember that the American gallon contains 231c.in. only, being five-sixths of the capacity of our gallon of 277$\frac{1}{4}$c.in. In other respects the measurements are the same.

The height to which a jet will rise under a given head of water may be universally known from the general laws of hydraulics and the few experiments which have been made on the special subject, but in fire-extinguishing apparatus the interruptions to the flow of water are so numerous and unconventional that direct experiment on a large and practical scale is absolutely necessary to insure anything like accurate results. These have hitherto been few in number.

Mr. Freeman's experiments were made on a large and practical scale, and extended to the conditions of the hose pipe as well as of the delivery or "play pipe," and the form and dimensions of the nozzle. The experiments were made in the latter part of the year 1888. The subjects investigated were: (1) The coefficient of discharge of nozzles of various forms; (2) Loss of pressure by friction in fire-hose with interior surface of various degrees of smoothness; (3) Effect of curves in line of fire-hose upon loss of pressure; (4) Effect of reduction of area of waterway at couplings upon loss of pressure in hose; (5) Height and distance reached by jets of water under various pressures; (6) Influence of size of jet upon height attained under a given pressure; (7) Comparative efficiency of various kinds of nozzles; (8) Distribution of velocity in jets. The author, realising the aversion of the busy practical man to algebraic formulas, and to a long array of figures, has embodied the final practical results in tables covering the range of sizes and pressures commonly met with in practice. For practical purposes the pressure per square inch in pounds is preferred to the height in feet of the head of water; but the one expression is easily converted into the other when desirable, the pressure in pounds per square inch being 0·4341lb. per foot in height of the head of water, and, inversely, the head of water in feet is 2·3 times the pressure per square inch.

It was found by the experiments that the fire-stream tables, hitherto in most general use, under-estimated the quantity of water discharged from fire-hose nozzles by 15 or 20 per cent. The coefficient of discharge from smooth nozzles of different forms was pretty constant under different pressures when these were high—so much so that measurements of the quantity discharged by any nozzle might be in that way ascertained. When accurate measurements are required the pressure must be measured near the base of the play-pipe, by means of carefully made piezometers, and the orifice of discharge should be as carefully calipered. The loss of pressure by friction of the flow of water through the hose was found to vary much with the quality of the hose; as much, indeed, as 40 per cent. The degree of roughness of the interior surface of the hose was made visible by means of plaster casts photographed.

The loss by friction in the very smoothest solid rubber hose is represented by	13·4
With ordinary solid rubber hose	14·0
The very smoothest rubber-lined fabric hose	14·1
Very rough rubber-lined fabric hose.....	25·5
Excellent leather hose	21·5
Ordinary unlined linen or canvas hose....	33·3

The nominal size of hose was 2½in. diam., but the actual diameter of the ordinary makes varied from 2⅞ to 2¾in. internal diameter. This alone makes about 50 per cent. difference in loss of pressure by friction, and indicates that previous data, based on nominal diameter, are not reliable for determining comparative loss in different kinds of hose. The sinuosity of a line of hose was found not to increase friction more than about 5 per cent. Curves of any radius short of cramping the hose were found to retard the flow of water but little. The sudden reduction of the area of the waterway of a hose, and its sudden enlargement again to the ordinary size, as with couplings of small diameter, was found to decrease the pressure by about the same amount as is generally understood—viz., that it equals the head corresponding to the difference in velocity due to passing from a contracted channel to one of larger sectional area.

An important point observed in the experiments is the height and distance attained by jets within the limits of practical fire streams. Previous experiments mostly went to show the height or distance of the extreme drops, a fact of almost no value to the practical fire engineer. Jets from about forty different nozzles were compared in order to find the form giving the most perfect jet. A smooth nozzle was found to give a jet a little superior to that from a ring nozzle. The actual velocity of discharge in the central portion of a jet was found to equal the full theoretical velocity, in both sharp-edged and conical orifices, and the fact that the mean velocity of the whole sectional area of the stream was less than unity was found to be due to retardation close to the walls of the orifice.

The gauge adopted for measurement of pressures was an open mercury column. The ordinary Bourdon gauge was not found sufficiently accurate for first-class scientific work such as requires accuracy within 1 or 2 per cent. The mercury columns were each 20ft. in height, erected against the walls of mills and other buildings, and reading to about 117lb. per square inch pressure, and it is reasonable to expect these mercury gauges to measure a pressure correctly within the tenth part of 1 per cent. The quantity of water discharged at each experiment was measured in a tight and rigid rectangular tank holding about 1,350 gallons, built of heavy plank and smoothly lined with sheet zinc, with joints soldered perfectly tight. The height of the water in the tank before and after each experiment was determined by a glass tube about 1in. internal diameter, thus avoiding, by the large diameter, errors due to capillary attraction, to which was attached a scale graduated to hundredths of a foot, and Mr. Freeman considers that any error of measurement could not exceed the third part of 1 per cent. The coefficients of discharge determined by the experiments were those due to the play pipe and nozzle combined, a taper play pipe being really a part of the nozzle.

The loss of pressure by friction in hose was determined for different kinds of 2½in. hose in ordinary use, and for each kind of hose the friction was determined with 1in., 1⅛in., 1¼in., and 1⅜in. smooth nozzles attached, and with some kinds also with ¾in., ⅞in., and 1½in. nozzles attached. The hydrant pressure in the various experiments varied from 15lb. to 125lb. per square inch, and the quantity of water delivered by the hose from 50 gallons to 325 gallons per minute; the corresponding mean velocity in some of the kinds of hose ranging from 3ft. to about 21ft. per second. The loss of pressure by friction in hose was found to follow the usually understood theory that it is proportional to the square of the velocity, closely enough, at least, for nearly all practical purposes; and, as was to be expected, the friction loss was found to be substantially proportional to the length of the hose, which varied in the experiments from 50ft. to 325ft. The important point of determining how far a jet reaches as a good fire stream, as distinguished from the extreme limit of the farthest drops, is chiefly a matter of judgment on the part of the observer. In recording the maximum distance to which the jet under experiment could be classed as a good fire stream, Mr. Freeman laid down a few rules which should be observed:—

1. A stream which at the limit determined upon had not lost continuity of stream by breaking into showers of spray.

2. A stream which up to the limit named appeared to shoot nine-tenths of its whole volume of water inside of a circle 15in. diameter, and three-quarters of it inside a 10in. circle, as nearly as could be judged by the eye.

3. A stream which would probably be stiff enough to attain, in fair condition, the height or distance recorded, even though a fresh breeze were blowing.

4. Which at the limit named would, with no wind, enter a room through a window-opening, and barely strike the ceiling with force enough to spatter well.

With regard to the height to which a jet of given diameter will rise under a given head of water, it would require, to express it accurately, a complicated formula; but as an approximation the following may serve very well within the range of fire streams, with nozzles from ¾in. to 1⅜in. diameter, and with pressures of not more than 80lb. per square inch. Its use, Mr. Freeman says, will not lead to an error of more than 3 or 4 per cent.

The approximate formula is thus given—Let J = extreme height in feet to which the average extreme drops of a vertical jet will rise in still air. Let h = static head of water in feet acting at base of play-pipe, and d = diameter of jet close to nozzle, in inches. This, it may be remarked, for smooth nozzles is the same as the diameter of the orifice: for ring nozzles d may be taken as 86 per cent. of the diameter of the orifice. Then

$$J = h - \cdot00135 \frac{h^2}{d}.$$

VESTIGES OF OLD NEWCASTLE AND GATESHEAD.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

ONE of our double-page plates this week, and the marginal illustrations given with this article, are taken by permission from the book just published* under the above title by Messrs. W. H. Knowles, architect, and J. R. Boyle, F.S.A., the author of "The Lost Towns of the Humber." All the drawings given are by Mr. Knowles, and the letterpress is due to his collaborator, whose notes he has both cleverly and copiously illustrated in a thorough and useful style, without aiming at any exceptional artistic effect, and yet deserving the character of being substantially accurate Mr. Boyle says that "the history of Newcastle in any finally satisfactory way is yet unwritten, and probably too the writer is yet unborn. At present his task is scarcely an achievable one—for his records of Newcastle remain in a sealed book." Mr. Boyle promises, at no distant date, a work, uniform with his present "Vestiges," on the walls and gates of the city, and the "Chronicles of Tyne Bridge." His task now, which he has admirably performed, is to take the reader through the towns he describes, showing all that actually remains worthy of note, and here and there he illustrates, by means of old prints and engravings, what the buildings, now so changed, really were in the past. Commencing with "The Side"—quaintest of streets and strangest of names—he tells us its origin, and how, in Gray's day, it was the centre of the best retail trade in Newcastle, with its gabled fronts and overhailing stories almost meeting in parts in the middle. The woodcut in Richardson's Table Book serves to afford an idea of its appearance at the commencement of the present century. The corporation shortly afterwards widened the thoroughfares and removed the south side. One of the best sketches in the book is the view of a passage below Kelly's shop in "the Side." Some of the old interiors there still have good staircases and fireplaces. The Classic ground of "Sandhill," "a spacious place adorned with buildings very high and stately," is next referred to, with its rich historic associations, including the romance of John Scott and Bessy Surtees, the families of Carr and Cock, and "Katy's Coffee House." We give a sketch (Fig. 1) of the Merchants' Court, the magnificent room above the present Exchange in Sandhill where the Merchant Adventurers hold their court. The splendid, carved mantelpiece in this chamber was taken from the ancient room over the Maison Dieu, as Thornton's hospital was usually called, and re-erected with suitable surroundings of panelled walls and elaborate frieze. It bears the date 1636. The subjects of the two principal panels are the Judgment of Solomon and the Miraculous Draught of Fishes. The author gives a history of the "Mercatorial Guild," with the privileges of that body, the arms of the governors, and their customs. The Guild Hall is a very quaint apartment with an arcaded gallery on one side, and a curious hammer-beamed roof. It was erected by Robert Trollope, whose name is chiefly known by an apocryphal and vulgar epitaph.

* Vestiges of Old Newcastle and Gateshead. By W. Knowles and R. F. Boyle, F.S.A. Newcastle: Andrew Reid, Sons, and Co. London: Elliot Stock. 1890.

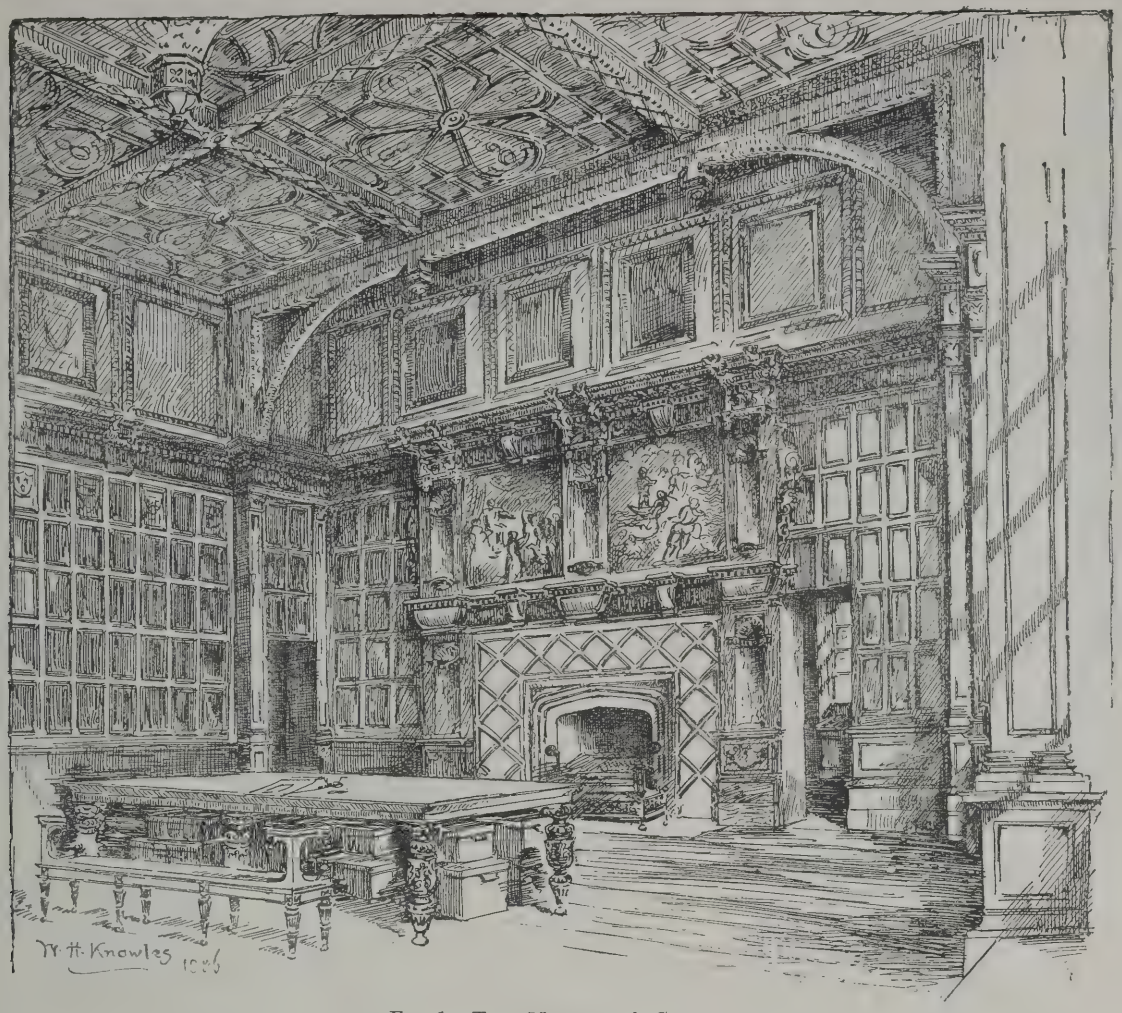


Fig. 1.—The Merchants' Court.



Fig. 2.—Plan of the Castle.

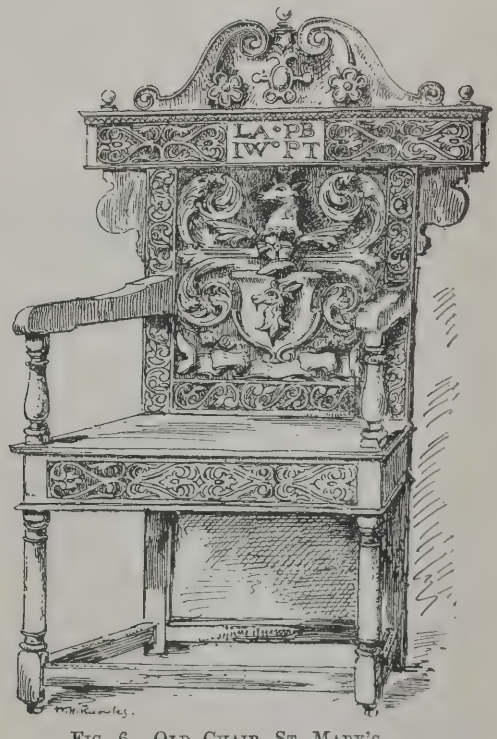
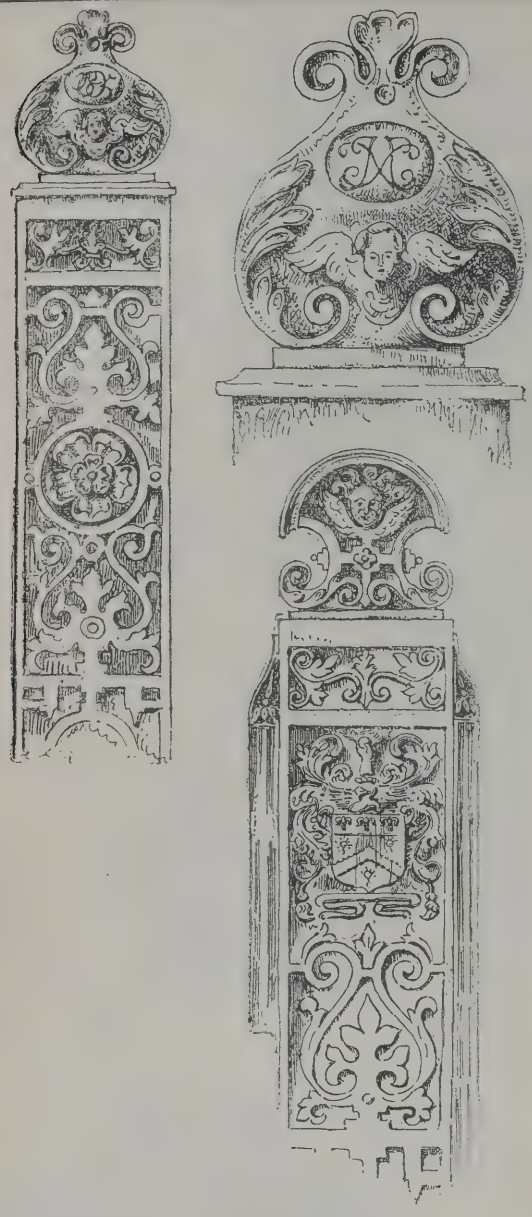


Fig. 6.—Old Chair, St. Mary's.

In the City Treasurer's office may be seen "the Town Hutch," an old coffer of fabulous antiquity, but bearing the date 1716. The early Quakerism of Gateshead associated with Fox is the interesting matter which furnishes much of the next chapter, and we are introduced to not a few singular characters, their troubles and experiences. Turning from these, we study under Mr. Boyle's guidance the Castle, which may, according to some, have been built on the identical site of the Pons Ælii of the Romans and the Monkchester of the Saxons. The history of the fortress as we now see it is of no mean character, of course, "The New Castle upon Tyne," and in the book before us a somewhat full account is given, supplying notes of most of the more important events in its records. Mr. Longstaffe and Mr. Ventress have assisted in describing the parts of the Castle no longer existing, but some portions, even with the aid of such able authorities, are necessarily conjectural. The plan (Fig. 2) of the place, together with the bird's-eye view worked out from a model, are very helpful to the reader, and Mr. Knowles' sketches leave nothing to be desired. The Guard Room, Blackgate, is specially well done. We reprint an east view of the keep, which is rectangular on plan, but not quite square. Its walls are of enormous thickness, between 14ft. and 16ft. in parts. To the roof of the keep is 82ft. high, and 107ft. to the top of the flagstaff turret. The newel staircase in the S.E. angle is very interesting. It consists of 123 steps from the



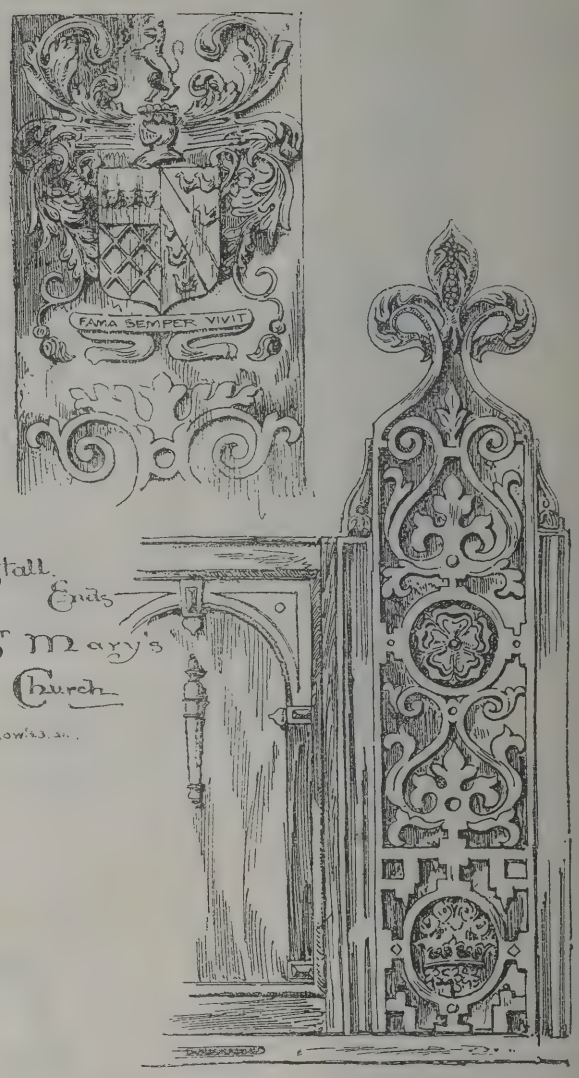


Fig. 5.

ground floor to the roof. The walls are honeycombed by almost innumerable passages, galleries, and chambers. We add a sketch of the Guard Chamber, the principal room of the basement. It measures 26½ft. by 20½ft., and it is vaulted, springing from a plain cylindrical central pillar. The chapel is elaborated with the Norman chevron ornament to the arches. Space fails us to tell even an outline here of all that is added about the Castle. The now cathedral church of St. Nicholas, the famous parish-church, founded, it is said, by Osmund, Bishop of Salisbury, in 1091, naturally also has received Mr. Boyle's particular attention, both from the archæological and ecclesiastical point of view, thus grouping together much useful and entertaining matter of special interest to the student and ecclesiologist. We are enabled to reproduce Mr. Knowles' sketch of the interior, looking S.E. from the north aisle of the nave, and we add a study of the north aisle itself, Fig. 3, and a view of the crypt, Fig. 4. No part of the Early Norman Church remains, and only a small portion may be said to comprise the Early English masonry. The conversion of the church and its recent improvements have been admirably done by Mr. R. J. Johnson, F.S.A., of Newcastle. The Maddison Monument, shown on our lithographic plate, is an odd composition of unusual shape. It originally was fixed to the pillar at the west end of the small aisle of the chancel, but was moved to its present place in the south transept during the late restoration. The principal figures on the front of the monument are those of Henry Maddison and his wife. The two larger figures on the left are his parents. The ten sons and six daughters of Henry kneel in the small panels below. Faith with a cross, Charity with a flaming heart, and Hope with an anchor, surmount the pediment above. The inscriptions are very lengthy, and date from 1624 to 1653. Pilgrim-street, King John's Palace; St. Mary's, Gateshead, where there are some fine old Jacobean stalls (Fig. 5) and a good old chair (Fig. 6); Percy-street; the Keelmen's Hospital; St. John's Church, from which we illustrate the pulpit (Fig. 7); The Quayside; Silver-street and Pandon; the Black Friars; and Trinity House, with its old chapel, each in turn command attention. Then the book is devoted to Gateshead, with the Jesus Hospital; Akenside Hill and Dog Bank. All Saints' Church and the

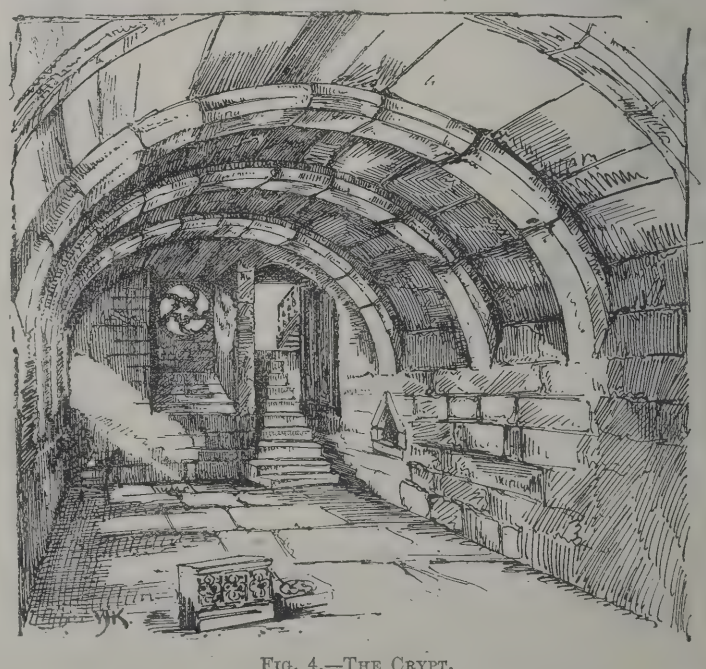


Fig. 4.—The Crypt.



Fig. 3.—In the North Aisle of the Nave.

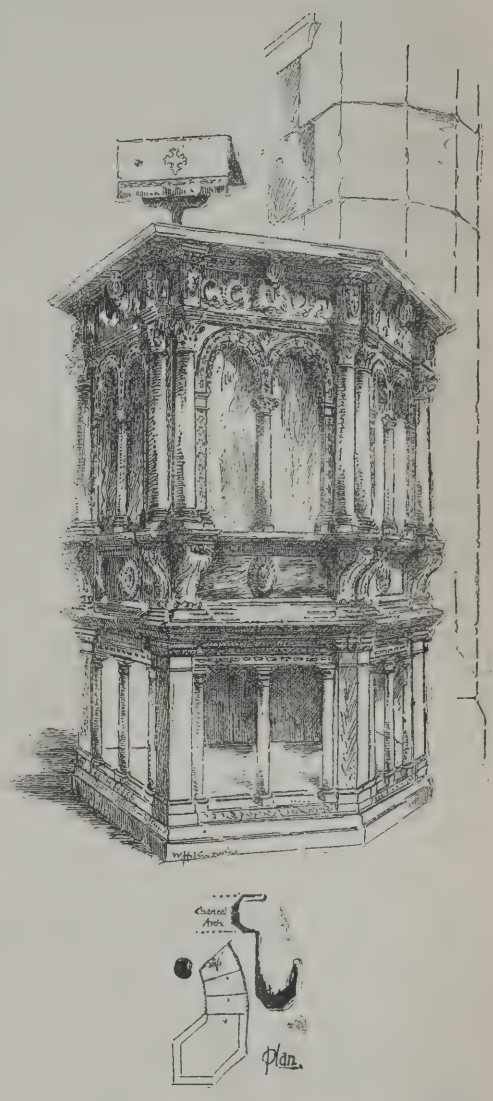


Fig. 7.—The Pulpit.

celebrated Thornton Brass are illustrated and described, with a chapter on the Jesus Chapel at Jesmond (Jesumunde), where there is a holy well, an ancient mill, and its "Free Chapel of the Blessed Virgin Mary." The hospitals of Gateshead, with the early English Chapel of St. Edmund the Confessor, are all fully described by Mr. Boyle, who concludes his useful and entertaining volume with particulars of the "Close" and Riverside, Newcastle, not forgetting the ruined chapel of St. Lawrence, less than a stone's throw from the Tyne Steam Ferry, at Mushroom. With the "Close" the book ends. It is well bound and capitally printed on good paper, and the illustrations are, for the most part, photographs by Mr. James Akerman, of Queen's-square, who always does his work well.

THE WHITEFIELD TABERNACLE AND TOPLADY MEMORIAL HALL COMPETITION.

THE following is an abstract of Professor T. Roger Smith, the professional referee's, report in this competition. The selected architect is Mr. F. Boreham, A.R.I.B.A., of 75, Finsbury-pavement. His design was marked "Winged Heart." The second place is awarded to Mr. J. M. Brydon, F.R.I.B.A., for his plan having the motto "Lux Mundi":

To contrive and design a large Nonconformist place of worship, large public hall, and an underground Sunday-school for 1,000 children are neither of them simple tasks, but in this case the three have to be combined; a very considerable amount of gangways, staircases, rooms, and services of different sorts have to be provided for, and a portion of the accommodation has to be let off. The site is only just large enough for the purpose—in fact, should there be any difficulty about securing unobstructed light over the adjoining land, it is not large enough, and the money proposed to be spent, though in itself a large sum, will require great economy if it is to suffice for securing such ample and varied accommodation. A combination of the best planning, the best interior design for chapel and hall, and the best exterior with the most economical contrivance is what one would desire to find, but, as was perhaps to be expected, no competitor has, in my opinion, been so fortunate as exactly to hit upon such a combination, and the decision which I have arrived at in selecting two designs to receive the premiums has necessarily been based upon a compromise. I will endeavour to state clearly the principal reasons for that decision; but it must be quite understood that I do not propose to commit to writing more than the most important peculiarities of individual designs which have presented themselves to my notice. The most important part of the competition is undoubtedly the chapel, its plan and the architectural treatment of its interior. In so large a place, it is desirable that the ceiling should not be thrown across from wall to wall, but in some way carried in part by columns, so that the centre part is higher than the sides. This difference of height gives the means of introducing light through what is known as a clear story, at a point where good illumination is generally procurable, and where the interior benefits much by the introduction of light. The next most important matter for you is the hall, which, as it is to act as a pioneer building, should be spacious, convenient, and attractive. Next to this comes the appearance of the exterior, especially the front to Tottenham Court-road, and lastly the schools, classrooms, approaches, staircases, and other accessory parts. I think it fair to the competitors to add that, in my opinion, it is virtually impossible to erect buildings giving the amount of accommodation which you require for £15,000, if they are to have such an amount of elegance, dignity, and convenience as will be appropriate at the present day. The designs submitted were ten in number, and were sent in under mottoes.

1. "Arcanus."—In this design the chapel is a simple unbroken rectangle, measuring about 93ft. by 63ft., lying east and west, with no recess for platform. The ceiling is carried across level from wall to wall, with a kind of groined cove at the walls; there are lofty windows above the gallery level, the seats are arranged circularly, with the platform as a centre, the gallery front approaches an ellipse in outline, and there is 35ft. between the gallery fronts. The hall lies north and south, measuring 80ft. in extreme length by 40ft. wide, and the space between its gallery fronts is barely 20ft., which is too little. Roomy staircases are provided at the north end of hall, and a platform at south curved in outline, and with good retiring rooms. The school is large and well lighted; but the provision of conveniences is scanty. Generally speaking, the arrangement and distribution of the various smaller services, classrooms, vestries, and that of the staircases and approaches are carefully contrived, and the kitchen (for tea meetings, &c.) is much better in this plan than in most. It is admitted in the report that the hall is too small to accommodate 1,500—a serious defect. The elevation to Tottenham Court-road is of Renaissance character, and rather striking with an angle tower. The interior of the chapel does not seem to have been so carefully studied as it deserved. I consider that economy has been fairly kept in view in the arrangement of this design.

2. "Forward."—In this design the chapel is a rectangle, measuring about 100ft. by 56ft. within the walls, with the axis north and south, and with a recess for the platform in the centre of the long side, putting the preacher in a position common enough in Scotch Presbyterian churches, but rare in England, and much better suited for small than for large places of worship. The seats are arranged amphitheatrically. There is an arrangement of arcade and clear story. The gallery may be described as occupying three sides of a square with rounded corners. The hall is a rectangle of 100ft. by about 54ft., but with two staircases cut out of it, and here again the platform is in the middle of one of the longer sides. The gallery has a semi-circular front line. The schools are roomy and good, and fairly well lighted; but neither the large room nor any other room receives light from two sides. The classroom arrangements are very good indeed, as are the ground-floor classrooms, but the secretary occupies one of the rooms that should be let as offices. There are three rooms to let. The architectural character of the interior of the chapel is decidedly good, and both it and the hall would, I think, be pleasing. The exterior is in a round-arched style, which may be called Romanesque, and with two moderate flanking towers. No design submitted seems to me to have a more appropriate front to Tottenham Court-road than this, or to have so successfully grappled with the difficult problem how to design an exterior which shall be at once appropriate to a public hall, a series of business offices, and the entrance to a large place of public worship. I believe that, if built, this elevation would look even better than it appears on the drawings. There is no definite estimate, and I much regret to be obliged to place this design, which has many merits, among the more expensive ones submitted. I consider also that the shape of the ground plan of the chapel (and of the hall) is open to serious objections, and would not be found satisfactory, especially in so large a building.

3. "Hearing and Seeing."—In this design the chapel is a rectangle, measuring within the main walls about 100ft. by 75ft., and with a small end recess for the platform in the upper story, not visible on the ground plan. Its axis lies north and south, and there is a clear story arrangement. The gallery plan is an oblong with the corners slightly rounded, and the gallery fronts are only 23ft. apart, which is far too little in so large a building. A flat ceiling over the clear story in the central part is provided, and wooden columns and corbels seem to be intended, and flat ceilings at a lower level over the aisles. The hall is oblong, with two square staircases cut out of it, and the platform is in the centre of the long side. The staircase projections divide the gallery into three. The schools are less satisfactory than in some of the designs, and there is not classroom accommodation on the school floor. The design seems to encroach on adjoining land with steps and areas. The arrangement of church parlour and classrooms seems suitable, but the inquiry rooms and cloak-rooms are ill-lighted, and the secretary badly placed. There are four small offices to be let. The exterior is of brick of a very simple Renaissance character, with two large angle towers, surmounted by domed roofs; but the general effect is extremely plain, and if the domed roofs were omitted would not be equal to such a purpose as this building is designed to serve. The architects definitely estimate this building at £15,000; but I consider that in this design the desire for economy has led the designers to lower the quality both of the exterior and of the interior below that which so important an undertaking requires.

4. "Lux Mundi."—This design is illustrated by the most artistic drawings submitted by any of the architects, and its interior, at any rate, is the most artistic piece of design shown. The two main parts of the building form two blocks with staircase between. The chapel is almost a square, with the corners slightly cut off, measuring 85ft. by 73ft. The seats are amphitheatrical in arrangement, and the gallery follows the same lines. There is no recess for the pulpit. The clear story arrangement is very prominent. It consists of a central hexagon with arches springing from piers, and carrying a very considerable dome. This and much of the general treatment recalls one of Sir Christopher Wren's finest churches. The hall is a rectangle measuring 45ft. by 99ft. The seating is not shown. The approach and the ground-floor rooms are convenient and there are four offices to let. It will be noticed that the square shape of the plan brings every person within a moderate distance of the platform, and also assists materially in the lighting of the chapel. The schools are roomy, and on the whole well lighted. The accommodation in the chapel is over the prescribed number. My estimate is 1,069 seats on the floor, and 575 in the gallery. The seating is particularly well arranged. The general arrangements are simple and suitable; but I think the staircases placed between hall and chapel would have to be extended were this design erected, as the space at the main entrance to chapel is cramped. The exterior is a squarish and rather plain block, of English 17th-Century character, and the dome hardly rises sufficiently above the adjacent roofs to be distinct; still, the architectural effect would not be bad, though not at all equal to that of the interior. I feel serious doubts, looking at the great size and height of the dome, and at the position of the platform under its edge, whether it would not be found materially to interfere with distinct hearing (at any rate, in part of the chapel) unless special precautions were taken. The author is satisfied, he states, that his design can be carried out within 10 per cent. of the sum fixed by the committee; but I cannot admit that this is a very economical design, though not an extravagant one. It is one which reflects the greatest credit on the designer and draughtsman.

5. "Lux."—In this design the church is of an irregular shape, of which the extreme dimensions are 94ft. by 64ft., consisting of an octagon with transepts and recesses. The gallery front forms five sides of an octagon. The seating makes some approximation to be amphitheatrical. The hall is a rectangle 49ft. by 82ft. The gallery plan of the hall is not shown. The school is roomy, but hardly well lighted. The author does not profess to give the accommodation asked in the instructions. He states that his hall only seats 1,200, and his chapel only 1,300. I am unable to make out anything like so many as even 1,300 seats in the chapel, and, after recognising the failure to supply in the chapel the required accommodation which the other architects have found it quite practicable to provide, it appears to me necessary to set this design aside at once. The architect's estimate of cost is £23,350.

6. "Red Cross."—The author of this design has occupied more space than most of the other architects. There appears to be a discrepancy between the actual site and the plan, and he has permitted himself to extend the Tottenham Court-road front to the actual dimensions of the land, and though I regret this, I have not considered that in fitting his design to the real site this architect has infringed the spirit of the instructions issued. The chapel is an amphitheatre in outline as well as in arrangement of seats. It is 78ft. wide and 84ft. deep from the wall behind the organ gallery to the back wall. The platform is next Whitefield-street. I doubt whether this arrangement as here planned would be quite satisfactory either to the preacher or the hearers. The gallery follows the same lines as the ground plan. There is no clear story, but the central part of the ceiling is raised higher than the sides on an arcade. The hall runs north and south, and has a gallery with curved front and the sides prolonged. The hall measures 90ft. by 52ft., and has good retiring rooms. The schoolrooms, &c., are well disposed, but unequally lighted. I have not found any reference to cost in the short report which accompanies this design; but the design is not an extravagant one.

7. "Spero."—The plan shows a large rectangle for the chapel, measuring 71ft. by 72ft., and with no pulpit recess. The seats are arranged amphitheatrically, the platform being at the north, and a similar disposition is adopted for the hall, with the platform to the west, and a semi-octagonal gallery. A large central dome over the chapel is carried on columns, two of which stand very much in the way near the platform; but the pulpit is not under the dome, as in the design of "Lux Mundi." Externally there is also a domical roof to each of the six square staircases. Access is obtained on the south, and projecting steps are shown there. These and an access at the north from Whitefield-street appear to be outside the boundary of the building line shown on the plan. The schoolrooms are spacious, but would in parts be extremely dark. The exterior possesses a four-storied elevation to Tottenham Court-road, and would depend largely for its effect on the numerous and costly domes. This design has been surpassed by several of those sent in, especially in its internal treatment. Its general arrangements, no doubt, are good; but they would be much curtailed if the projections were cut off within the building line. I do not find any reference to the cost of the design.

8. "Taxis."—This design is beyond all comparison the most original submitted; in some respects it is extreme, in others it is good, and in one respect (the internal design of the chapel) it is extremely good. The plan of the chapel is an irregular polygon 88ft. wide and 92ft. deep, having, like the design "Lux Mundi," a central hexagon for its heart. The gallery has a hexagonal front, but each side of the hexagon is a hollow curve instead of being straight. The hexagon is finished with a cleverly designed groined ceiling springing from pointed arches, and there are large windows filled with tracery. The hall is rectangular, and with two galleries. The schoolroom is large and lighted on three sides, and there are ample classrooms, but in not a few instances open to small objections, especially as to lighting. There are three rooms to let as offices. The secretary's office occupies a front space. The architect proposes to form a basement under the entire building, hall as well as chapel — a serious additional expense. The exterior is extremely picturesque, of Gothic architecture, rather Flemish in character, and a high tower with a very steep roof is a prominent object. There can be no doubt that if erected from this design the buildings would be extremely striking in appearance, and, as I have already observed, the interior of the chapel would be very successful and appropriate with its octagon of pointed arches, its tracery, and groined ceiling. The front to Tottenham Court-road also would be striking, interesting, and original; but there can be no doubt that the design would be one of the most expensive of those sent in, even without the lofty tower, while omitting the tower would diminish its attractiveness sensibly. The author of this design says that the tower is not included in the amount named by the committee, but does not give a definite estimate in his report.

9. "Winged Heart."—In this design the chapel is a rectangle 68ft. by 80ft., with recesses, making it 68ft. by 104ft. in extreme dimensions, and the seating on the ground floor is all straight and very well arranged. There are four staircases at the angles which serve to form the recesses alluded to above. The gallery has a semicircular sweep; there is 40ft. clear between the gallery fronts. The design provides an effective clear story and an open roof, forming a very successful interior, illustrated by a telling, but not, I think, an unfair, perspective view. The hall has an open span roof from wall to wall, it is a simple oblong, 101ft. by 51ft., with a gallery on three sides, and ample space between the gallery fronts. There is a great deal of good sense shown in the general arrangement of the building, but it depends to a considerable extent on the side entrances for ingress and egrees to the gallery of the hall, and partly to the school and chapel gallery. The author of this design has (like "Red Cross"), occupied more space next Tottenham Court-road than the plan issued to competitors shows, and having decided that "Red Cross" was justified in doing this, I of course decided similarly in the present case. The exterior is of round arched brick and stone treatment, with almost too many openings, better shown on the pen-and-ink perspective than on the coloured elevation. This exterior has no very strongly-defined architectural character, and is decidedly less successful than the interior, yet some features, such as the high roof over the hall, the lanterns, and the pinnacles on the buttresses, serve to counterbalance the uninteresting and very secular treatment of the ground story; and the grouping of the two blocks of buildings with their high roofs, as seen from the N.E. and S.E., promises to be very telling and picturesque. The general schoolroom, by no means so large as in some designs, is well lighted, the infants' schoolroom unequally lighted. The general arrangements of the approach, the church parlour and classrooms, and other ground-floor planning are good and well judged, and no fewer than six good offices have been contrived for letting. The author estimates

the design at £15,000. It is among the more economical designs.

10. "Wisdom, Strength, and Beauty."—In this design the chapel is rectangular, measuring 69ft. by 87ft. (or 98ft. to back of organ recess), with two square staircases at the south end. The gallery plan is an elongated octagon, and a large circular dome rises from the ceiling over this space. The principal entrance, steps, &c., are placed to the south, and though a large entrance passage from Tottenham Court-road is provided, but little use is made of it. The architect has departed from the instructions by placing his schools, &c., under the hall, neglecting the excavated basement existing under the chapel site, and, as designed, his schools would be so extremely dark as to be of practically little service. The exterior really has its principal front, which is very ambitious, to the south, and here a great dome and flanking towers appear. Towards Tottenham Court-road a very different elevation has been shown. The architect's estimate is £20,000, and the design is no doubt a very expensive one, and I think the author of it deserves some credit for not having put it down at £15,000. I consider, however, that its costly nature, its departure from the programme, and other reasons, practically render it impossible to entertain it.

In the above review of the designs I have intentionally avoided considering minutely the question of administrative rooms and school and class room arrangements. I think whatever design is adopted will have to be recast in many of these respects, and though the skill, or otherwise, with which these parts have been arranged have not passed unnoticed, I have not thought it necessary to extend this report by going into those particulars.

It appeared to me that, on various grounds already mentioned, I might set aside the plans of "Lux," of "Spero," and of "Wisdom, Strength, and Beauty." Of the remaining seven designs I have made approximate cubed estimates in order to see which are the most economical, and though the process known as cubing may not be always very safe as a guide to the actual cost of any one building, it is a very good way of finding out the comparative cheapness or expensiveness of several designs. I find that four designs are very considerably more economical than the others. I consider, therefore, that the first premium must be given to one of these four. They are "Hearing and Seeing," "Red Cross," "Arcanus," and "Winged Heart," and among these it appears to me that the balance of advantages rests very decidedly with "Winged Heart," to which design accordingly I award the first prize. The author of "Winged Heart," whose design I have already described, has secured very wide and spacious buildings both for the hall and chapel, so that while seating your people easily, no one will be remote from the speaker, and as the hall will have to serve as your place of worship at first, it is of importance that it should be capacious, not cramped, and with good space between the gallery fronts. As regards architectural treatment, I attach more importance to the interior of the chapel than to anything else, and that certainly has been very well designed. Access: numerous and fairly roomy staircases and good corridors where such would be useful are provided, and the design on the whole (though not the best in all respects) is, in my judgment, decidedly the best, taking every consideration into account.

The three designs which I consider ineligible for the first prize, "Lux Mundi," "Forward," and "Taxis," are all of them remarkable for artistic merit, and among them I select "Lux Mundi" as the design to receive the second premium; it is in my judgment the most artistic of the three named above, it is excellently planned, and it also is the least costly of the three.

[We shall notice the designs ourselves shortly. Considering that this report was sent in on September 10, they might, we should have thought, been visible, and the award made known before this.]

THE PHOTOGRAPHIC EXHIBITION, PALL MALL.

THE gathering of sun-pictures this year in Pall Mall affords nothing specially fresh or remarkable; but, on the whole, the exhibition may be described as a good one, comprising some exceedingly clever specimens of photography. The architectural subjects represented are less numerous than usual. The most important of this class, on account chiefly of its size, is an enlargement of Messrs. Bourne and Shepherd's fine photograph of the Taj Mahal at Agra, exhibited by the Autotype Company. The same firm show a whole series of plates illustrative of sculptures and designs by the late Alfred Stevens, besides some facsimiles by that artist of figure studies, lent by Sir Frederic Leighton. The Chimneypiece in the Dining-Room of Dorchester House, Park-lane, and the Wellington Monument in St. Paul's Cathedral are well represented in detail. We believe shortly a folio is to be published of these prints, under the direction of Mr. Hugh Stannus, and they will make a fine book, worthy of the man whose work the photographs so ably represent. The series of portraits of members of the Royal Academy which Mr. Ralph W. Robinson is publishing are continued this year, showing the artists at work, or in their own studios, posed for the occasion. Our readers will be more specially interested in seeing Mr. Alfred Waterhouse, R.A., seated before some plans; Sir Arthur Blomfield, A.R.A., looking up as if surprised, at his escritoire; Professor Geo. Aitchison, A.R.A., standing at the bookcase in his private room; and Mr. J. L. Pearson, R.A., engaged with a serious batch of papers, drawings, and correspondence, all seemingly taken while in harness with the surroundings of home. The likenesses in each case are good; but the light in which they necessarily were taken has not in every instance been equal to the requirements of the camera. Mr. G. Davison has gained a medal by his highly artistic study of "An Old Farmstead" seen over the onion-field at the time of harvest. It is a capital picture on grained paper, and having almost the effect of a sepia water-colour. Another medal is awarded to Mr. Lyddell Sawyer's "Two's Company," a scene by the road side, where an attractive country lass is engaged flirting with a young fellow leaning against the old stone steps in the wall, the girl being seated at the top. To the right stands a second swain, fired with jealousy, and looking on, consumed with a determination to do something desperate. The figures enact the characters well, and Mr. Sawyer has chosen a very happy setting for the incident, which he has represented thoroughly in taste and reserve. Nothing, however, is more easy than to overdo a subject of this kind. We have no comment but praise, too, for Mr. John E. Austin's medal picture of "The Love Letter," a scene on the shore where three fisher-girls, standing or seated by some old boats and baskets, are discussing the contents of a missive from one in whom they all clearly have more than a passing interest. The picture is eminently simple; but it is equally good, and certainly deserves the prize awarded to it. Mr. Harry Tolley obtains a medal for a splendid view of Bantry Bay, one of a grand series of fine landscapes. Mr. Lionel E. Westropp shows some artistic architectural photographs, to which we draw attention, particularly the views of Elmley Church, Worcestershire, standing overshadowed by the trees by the side of a stream, with its great square tower and Late Gothic windows—a most pleasing subject for the water-colourist inclined to old buildings. Mr. Westropp also shows Sir Walter Scott's tomb at Dryburgh Abbey by a brilliant silver print of good size. The hoar-frost views, "Christmas Eve at Kenilworth," are the best things of their kind in the gallery, showing the castle in the coldest of weather, 'midst the snow. There are a good many interiors of modern houses of the better sort, exhibited by Mr. H. W. Reeves in some very nice platinotypes, such as those of Morden Grange; the Hall, Kinmel, Abergele; and Lyneham, Wimbledon. Mr. H. Dudley Arnott's grand view of the choir and apse of Norwich Cathedral, taken from the screen looking east, is unquestionably a very beautiful photograph. We hope before long to give a reproduction of one of his similar studies of this vast interior kindly placed at our disposal some time since. The porch of Winchelsea Church, Sussex, is illustrated here by a bromide print showing the wall-flower covered gable of this crude structure which stands at the end of the famous remains of that once magnificent fabric, the nave of which is now all gone. Mr. Lyddell Sawyer, whose work we have before noticed, has an exceptionally clever scene over Durham, with the cathedral crowning the city in the distance. The atmospheric effect, as here portrayed, is admirably managed, and we must praise with equal warmth the same artist's "Wind against Tide," as well as "Towing up Stream." The Rococo Altar-piece from the Canary Isles, by Mr. G. Graham Toler, and Mrs. Wrigley's "Nave of York Minster" hanging near, may be mentioned—the latter as a study of light and shade. Mr. Fred Hollyer, ever thorough and artistic, sends some of his sympathetic renderings of Mr. E. Burne Jones's designs and copies of paintings by Messrs. G. F. Watts, R.A., and W. B. Richmond, A.R.A. Mr. Mendelssohn's portraits are good, and Mr. Van der Weyde shows a group of the children of Mr. Mortimer Mempes, dressed in Japanese costume. For this picture he takes a medal. Mr. Bedford Lemere contributes several good architectural studies of Grosvenor-square houses, and Mr. W. Bedford shines with some charming landscapes.

MUNICIPAL AND SANITARY ENGINEERS' ASSOCIATION.

THIS Association held a meeting in the Royal Scottish Society of Arts' Hall, Edinburgh, on the 25th ult. Mr. Boulnois, city engineer of Liverpool, presided. Mr. Cooper, the local burgh engineer, read a paper on "Municipal Work in Edinburgh." He said that the population of Edinburgh at present was 271,135, being a density of 54 persons per acre, and representing an annual rate of increase of somethink like 6,000. The maximum rate of density —900 persons per acre—was found in the Cowgate district, although it was rapidly becoming depopulated. The practice of erecting flat upon flat had become the bane of their slums, and had left them a heritage of insanitary and disease-producing conditions, which were to this day prevalent and disastrous. The death-rate of Edinburgh, previous to Dr. Chambers's improvement scheme, which cost the city £300,000, and unhoused 14,000 inhabitants, was 27 per 1,000; last year it was 16·54. The number of uninhabitable houses dealt with during the last five years was 2,000, of which 1,006 were closed, and the number of tenements where the drains had been overhauled was 3,400. The annual cost of inspecting the drainage arrangements and sanitary appliances of existing houses was £1,800, or thereabouts. With the exception of the sewage used in irrigating the Lochend and Craigentinny meadows, the sewage of the city, to the amount of nearly three million cubic feet per day, was drained into the Firth of Forth. The Chairman said that in Liverpool large sums of money had been spent in the destruction of rookeries. At one time they erected two large blocks of sanitary dwellings, but they had not met the requirements of the poor, and they were trying to sell them, almost to give them away. He was surprised that the far-famed meadows of Craigentinny were not the success which they at one time were led to believe. Mr. E. Pritchard (Birmingham) said that he was much pleased with the good condition of the Craigentinny meadows after so many years' usage. These meadows compared very favourably with the sewage farms of England.

CHIPS.

On Thursday, the 25th ult., a parish-room and Sunday school for St. Margaret's, Ilkley, was opened. The building is in the Gothic style, and the architects are Messrs. J. and E. Critchley, Bradford and Ilkley. The cost has been £3,100.

The extension of Atherton Parish Church has been commenced this week by taking down a block of old buildings at the west end, where the proposed addition is to be built. The site is to cost £1,200, and the extension of nave another £6,000.

The Girls' High School, which has been erected in Dundee at a cost of upwards of £25,000, through the liberality of Miss Harris and of her late brother, Bailie Harris, was opened on Friday by Dr. Craik, secretary to the Scottish Education Department.

With a view to discover some healthy method of spreading the working-class population of Newcastle over a greater area, a deputation of the corporation of that city, consisting of the chairman of the sanitary committee, the deputy-mayor, three members of the town council, and Mr. Law, city engineer, visited Glasgow on Friday for the purpose of inspecting the artisan dwellings erected by the City Improvements Trust in the Saltmarket and the other lodging-house accommodation provided by the Corporation in different districts of the city.

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Our Illustrations.

CONTEMPORARY ART WORKERS AND MANUFACTURERS.

(See description on p. 486.)

BANQUETING HALL STAIRCASE, GLASGOW MUNICIPAL BUILDINGS.

Mr. William Young, the well-known architect of this great work lately completed in Scotland, has within the past few days published an exceedingly well-produced folio, comprising some twenty collotype illustrations of the buildings, giving general views chiefly of the interior, and details of their parts, together with plans of the principal floors. These illustrations are from photographs of the actual work taken specially by Messrs. Bedford Lemere and Co., of London. The book opens with a tersely-put epitome of the history of the Glasgow Municipal Buildings Competitions, their origin and progress. The descriptions of the work in its several stages which Mr. Young furnishes are interesting, and we observe that he carefully avoids unnecessary reference to his own share in the designing and supervising of the vast undertaking now brought to a successful issue. It certainly is one of the most satisfactory buildings of the present generation, and illustrates much refined design and artistic ability, while a unity of scale is one of its best and most prominent characteristics. The structure is not, of course, devoid of faults, but it is not liney nor wirey, neither is it thin. The buildings contain 350,000cub.ft. of stone, 19,000cub.ft. of granite, and 10,000,000 bricks. The plinth is faced with granite 4ft. to 5ft. high, and above this the façades are faced with Polmaise and Dunmore stone. Every stone in the building has a V-groove cut in the vertical joint, which is run with pebbles and cement, thus uniting the whole in one homogeneous mass. The stone domes are similarly constructed without chain bond, but with brass dowels to every stone. The floors are fireproof. No general statement as to the actual cost of the buildings and their fitments, &c.; is given, but the sizes and dimensions of the structure are furnished. The illustrations are separately described in detail, commencing with the main front in George-square, then the principal entrance, with Mr. G. A. Lawson's beautiful sculptures, the loggia, the council-hall staircase, and the banqueting hall staircase. Of this part of the building we give two views, prepared for us from the original photographs, and showing one of the most interesting features in Mr. Young's elaborate conception. As will be seen from the prints, the work is built entirely of various coloured marbles, excepting the groined and domed ceilings. This marble work was entirely done by Messrs. Galbraith and Winton, of Glasgow. The dado is of alabaster, with a plinth of veined marble. The steps, also of marble, are 11ft. long, and solid. The balusters are of turned alabaster, with a capping to match the dado. The columns are of blocks of alabaster and Brescia, having white marble caps with purple Brescia, veined Carrara, and red transparent alabaster spread over the walls the whole height, three stories, to the top. The ceiling is of rich plaster-work. The floor is veined marble, with Numidian in squares relieved by white. The design is a work of the Renaissance corresponding with the general style of the building. Other views in Mr. Young's book give the "Faïence Corridor" with its keramic mosaic floor; the Council-hall, the Satin-wood Salon, the Octagon Salon, and the Mahogany Salon, the library, and the Lord Provost's room. The reception-room, elaborated in an Italian treatment of elegant forms, seems to be a particularly rich apartment, with panels in solid gilt on a dull yellow-green ground, relieved by festoon and pendent enrichments also in silk and gold, and the walls between the pilasters are filled with brocaded silk in character with the rest. The high dado and other woodwork is of Cuba mahogany. The *chandelle* ornaments are gilt. The fine ceiling is of fibrous plaster like the deep architectural frieze under a plain deep cove, which is effective. The detail of all this work, and the furniture specially designed by the architect, is very good. The library, chimney-piece, and book-cases are equally satisfactory, neither care nor expense being spared to make them so. The Lord Provost's room we like less than the others perhaps, and in the views the gas pendants seem needlessly large. This may be due to the tricks of the camera. The views which we give indicate sufficiently the style of work adopted. Messrs. David Bryce and Son, of Glasgow, are the publishers. The cover would have been more in keeping without the diagonally-placed lettering. Other illustrations of the Glasgow Municipal Buildings will be found in the Building News for Jan. 16th and May 1, 1885; Sept. 16th, 1887; April 20th, 1888; and March 29th, 1889.

ST. JUDE'S CHURCH, SOUTHWARK—DESIGN FOR REBUILDING.

The present church, which was originally the chapel of the Philanthropic Society's schools, was once crowded with fashionable congregations, attracted by the music and preaching, for which the church was renowned. Efforts have from time to time been made to communicate to the structure some more ecclesiastical appearance, but without success; and on the progress of decay rendering some extensive repairs imperative, the present vicar, the Rev. J. Watkins Pitchford, M.A., wisely determined upon entire reconstruction. The design illustrated was selected in a limited competition. Several advantages are gained by placing the new church with its axis at right angles to the old, one of these being the opening up of space for a playground to the schools adjoining. As the church is of somewhat short proportion, a continuous line of roof over nave and chancel has been adopted. The building will be seated for 500. The estimated expenditure is £4,000, towards which the vicar has in the past two years collected £2,700.

VESTIGES OF OLD NEWCASTLE AND GATESHEAD.

(See description and further illustrations on pp. 458-461.)

JEWISH WORKING MEN'S CLUB-HOUSE AND PUBLIC HALL.

These buildings are now in the course of erection for the committee, Mr. D. P. Schloss, chairman, in Exchange-street and Knowsley-street, Cheetham, Manchester, in the centre of the Jewish working-men's colony. The accommodation is very ample, and at a cheap rate, the total cost of the buildings, ready for occupation, including architect's charges, being only £2,640 10s. The front is in grey end headers, set in black mortar, with quoins of red stocks at all angles. The public hall is roofed with semi-circular principals made in three pitch-pine ribs, and is arranged to give the best acoustic results. The heating is by hot water, low pressure. Special attention has been given to ventilation, fresh air being supplied at floor level, and 6ft. above same, over hot-water pipes, foul air being extracted by a special ventilating shaft in connection with heating apparatus, and with ventilating shafts in connection with sun lights. The contractors are Messrs. Burgess and Galt; bricklayer, Mr. Evan Roberts; mason, Mr. J. B. Kendall, and the works are being carried out under the superintendence of the architects, Messrs. Goldsmith and Son, 63, Faulkner-street, Manchester.

SKETCHES OF WROUGHT-IRON WORK.

The examples of wrought-iron gates published herewith are taken from Highgate and Lincoln, and their date may be assigned to the 17th century. The people of Highgate, no doubt influenced by the nearness of the Protector, who once occupied Cromwell House there, erected a great many of these gates and over-gates fronting their villas, several of which still remain. Generally, as in the sketches from Winchester House and Lincoln, a place was provided in the overgate for the lamp. Many of the gates still have, attached to their imposts, the extinguisher in which the link boys put out the light of their torches. The gate at Lincoln is only one example of many of which the neighbourhood of the city can boast; they all possess a distinctly similar manner of work, which would lead one to suppose they were wrought by the same smiths. The Halls of Nettleham and Fulbeck, villages within a few miles of Lincoln, possess similar entrances of great beauty and elaborate detail.

SHERRICK LODGE, SKERRIES, CO. DUBLIN.

The pen-and-ink drawing which we reproduce was hung at this year's Exhibition of the Royal Hibernian Academy. It represents a small summer seaside box, designed for Mr. T. S. F. Battersby, B.L., by Mr. Howard Pentland, B.A., Bac.Eng., F.R.I.B.A. The ground floor consists of a top-lighted saloon, with sitting-rooms, kitchen, and offices disposed around, and is built throughout of 9in. brickwork, exposed both inside and outside. The upper part consists of a gallery around the saloon, off which the bedrooms open, and is built with timber and plaster. The roof is covered with double roll tiles. There are two sitting-rooms and five bedrooms. The contractor was Mr. Michael Heeney, of Balbriggan, and the cost was about £450. The floors of the saloon and vestibule are tiled, and those of the sitting-rooms are laid with 1in. American ash, in narrow widths. A 9in. by 6in. moulded plate runs round all the walls, over the doors, and windows, and on this rest the joists, which are exposed and moulded. The internal effect of the red-brick walls is very cosy and picturesque. The house, which commands an extensive view of islands and coast, stands on the sea-sand at the mouth of a small river, the banks of which are planted with sallies, Austrian pines, tamarisks, and sea-buckthorns. The foundations are of concrete, and were made by digging out the sand, mixing it with cement, and throwing it back into the trenches.

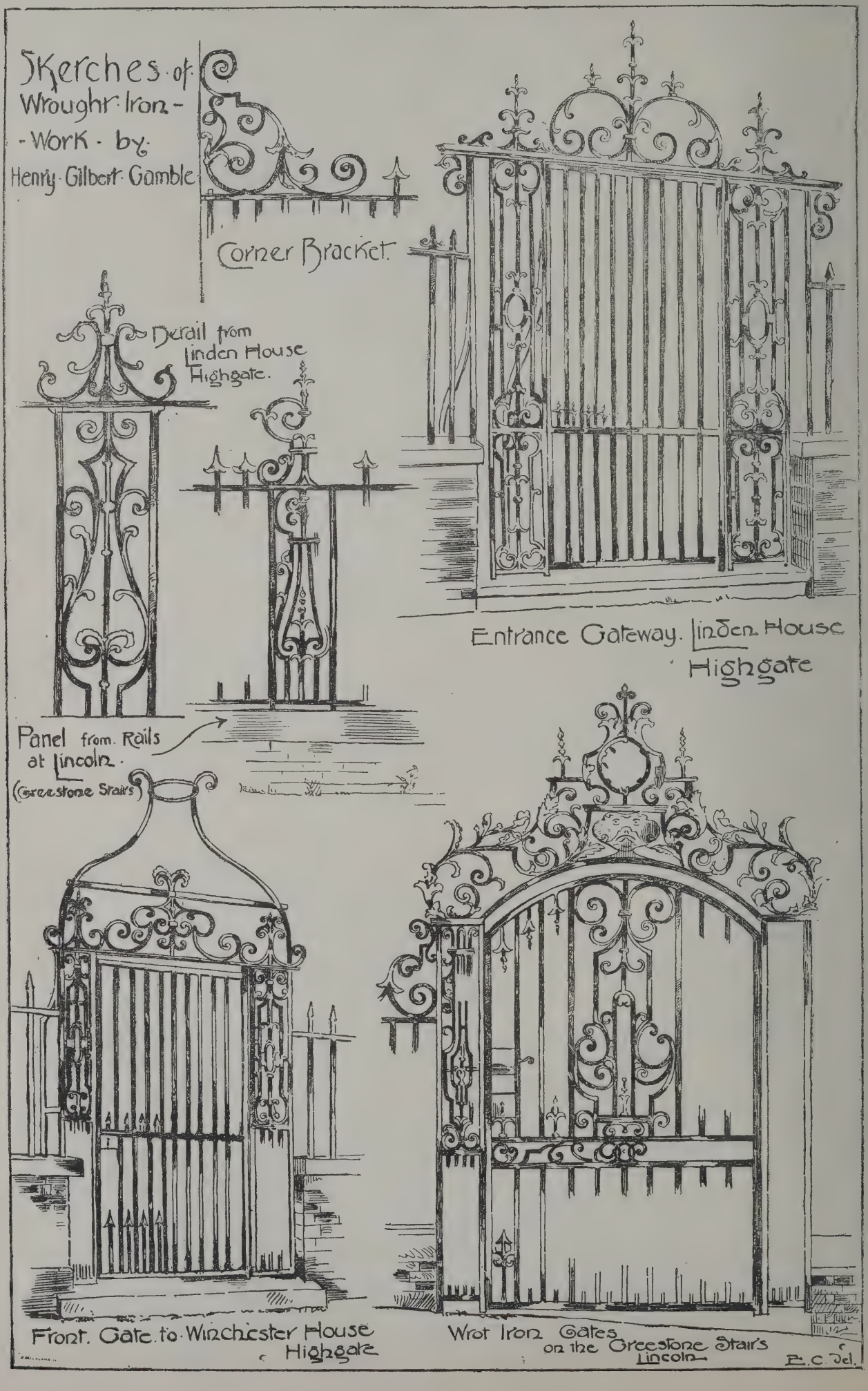
CHIPS.

The Poorhouse Committee of the Dundee Parochial Board instructed Mr. Alexander, city architect, on Friday, to prepare plans for a sick hospital to accommodate 300 patients, the building to be on the pavilion system, two stories high.

The Bishop of Durham consecrated on Friday the new portion of the cemetery at Bishop Wearmouth. The *Sunderland Echo* states that Mr. D. Balfour, C.E., the surveyor from whose designs the grounds were laid out, was present at the ceremony "in wig and gown."

The plans for the new General Post-office for Leeds, to be erected on a portion of the site of the old Coloured Cloth Hall, have now been completed. They show a building having its front to the open space abutting upon Park-row, and its sides to Infirmary-street and Quebec-street. It will be a stone structure of four stories, and somewhat plain externally.

The coming of age of Mr. William Edward Godwin, eldest son of Mr. William H. Godwin, of Withington Tile Works and the Ferns, Lugwardine, was celebrated on Thursday, Sept. 25th. At the Tile Works, Mr. W. E. Godwin was made the recipient of a handsome Gladstone bag and dressing-case from the employés of the firm at Withington. Mr. Robert Hooper made the presentation, as one of the oldest workmen of the firm. In the afternoon the workpeople formed into a procession, and, headed by the Lugwardine Works Drum and Fife Band and the Withington Brass Band, marched to the Ferns, where tea on the lawn was followed by sports.


Sketches of Wrought Iron-Work by Henry Gilbert Gamble
Corner Bracket
Detail from Linden House Highgate.
Entrance Gateway. Linden House Highgate
Panel from Rails at Lincoln. (Greestone Stairs)
Front Gate to Winchester House Highgate
Wrot Iron Gates on the Greestone Stairs Lincoln
E.C. Del.



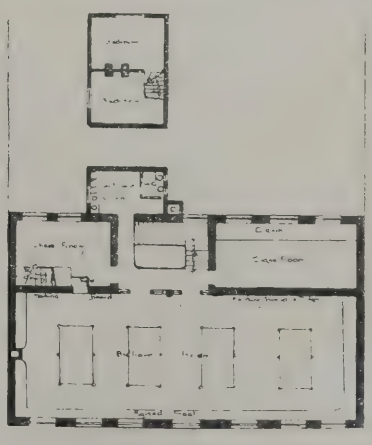
Exterior View



Interior of Public Hall



Ground Plan



First Floor Plan



Basement Plan

DELLABAN

JEWS CLUBHOUSE AND PUBLIC HALL. GOLDSMITH AND SON, Architects, Manchester.

WAYSIDE NOTES.

RETURNING to town after a few days' absence, I learned that something mysterious had happened in connection with our only London Bridge. Rumours of the displacement of certain stones of unwieldy dimensions from their positions in the abutments of the wide-spanning arches were abroad, and made me curious to ascertain the nature and cause of the damage done. Crossing the bridge on Wednesday morning, from the Surrey side, a gaping crowd opposite the Pearl Insurance Company's premises seemed to indicate the whereabouts of the object of my search, much as the stealthy pointer discloses a covey of birds to the wily sportsman. Sure enough, above the cut-water of first river pier some disturbing agent had been at work, and massive stones had been displaced by something more than the whisk of a dolphin's tail. How came it about? I had missed any newspaper accounts that may have been given of the occurrence, and only understood that, apart from certain rumours as to a certain vessel having had its nose under the projecting courses and thus displaced the stones with the rising of the tide, the cause of the injury was not precisely known, even to the proper "authorities." Whatever the cause—which will probably be found to be the careless handling of some vessel of large tonnage, judging from the aspect of displaced masonry—it is pretty certain that the sooner the stones are replaced the better, even if the roadway of the bridge have to be contracted a bit for a short time. The consequent congestion of traffic will be deplorable, it is true; but if it is impossible, as I understand, to repair the abutments from the river, there is no help for it, and the sooner repaired the sooner will the anxious crowd disperse. Fortunately for the condition of the eastern side-walk, it is impossible, on account of the projection of the cornice, to glimpse the displaced stones over the parapet. If it is possible to lay the charge of the damage to some shipowner, by all means let him be supplied with a little bill; but it is no use making a mystery of what, I should say, can only have been done in one way—by the enormous leverage force of the tide acting through the medium of a large vessel. A mere collision could scarcely have displaced the blocks, and they certainly were not caused to assume their present position by anyone sneezing in the vicinity.

The Tower Bridge progresses, though, as only natural and proper with a work of such dimensions, somewhat slowly. The present condition of the works has not been attained without the laying-down of some 80,000 tons of stone—as I learn from the report of the visit of the Bridge House Estates Committee, made on Tuesday last—and this merely in the construction of the two great piers, now drawing towards a satisfactory completion. The statistical figures of the complete bridge are impressive:—31 millions of bricks, 19,500 tons of cement, and 70,500 cubic yards of concrete, not to mention the 15,000 tons of iron and steel. It is reported that the Committee "witnessed with interest" the riveting of some of the ironwork by means of hydraulic pressure, but this method of riveting is now becoming so general in works of any magnitude that it must soon cease to be a novelty to even the ordinary sightseer.

Having been on the South Coast for a few days, I have noted two or three facts. The works for the new harbour at Newhaven, destined to obviate the necessity for the Continental boats waiting for the tide before they can cross the harbour bar, are progressing favourably—so far as could be judged from a distant point of view,—the contractors being busy throwing down tons of concrete at the head of the pier, which now projects considerably into the sea, and will apparently form a shelter from stiff sou'-westers after the manner of the pier at Dover. It will be a blessing to travellers by this route to Normandy, Paris, and the Continent generally, as I can say from experience after spending several long night hours on the Newhaven quay waiting for the tide. The pier, let us hope, will be of a very different stamp to the sea-wall towards Seaford. In its present condition that ill-fated structure is a warning and lesson to the constructors of deep-sea piers, breakwaters, and walls. For a mile or more it is overthrown—here with a wild, chaotic look, there in a quiet, dignified manner, as though the sea had gently but irresistibly rebuked the attempt to stay its freedom of action. Block after block of massy concrete is evenly and regularly overturned towards the land, and the next phenomenal gale with a high tide will flood the low-lying ground and wastes behind the beach. Judging by the design, arrangement, construction, position, and surroundings of the wall—an insignificant portion of which alone stands intact—I do not greatly wonder at its present humbled condition.

Seaford, some two or three miles east of Newhaven, should some day be a considerable seaside resort. It has several good attributes. The place is swept freely by breezes from both sea and land, and, though not having the snug, sheltered nooks of a place like Hastings or St. Leonard's, it reaps in summer the advantage of its open situation. The encircling downs may protect it in a measure from northerly winds; but the hills are so far back that they could not make the place close in hot weather. Under a fine bluff at the east of the town there may, however, be found some sheltered sites for building, which, though actually on a small scale, is relatively brisk at Seaford. Upon the newly-constructed sea-wall and esplanade a considerable hotel is now being erected, and several houses close at hand. Unfortunately for the older houses constituting the picturesque front of old Seaford, the new sea-wall cuts off all their view of the sea, and moreover a somewhat dull tract of ground is formed by the same cause. The sea-wall being considerably higher than the ground behind, and the old sea front being set back inland at the same low level, the best course to pursue in future building operations would be to incline the approach roads to the esplanade, as has been done with the approach to the new hotel; but whether this course will be adopted throughout remains to be seen. Unfortunately, things are so often done in a haphazard manner at new seaside resorts, care for future effect and well-being generally being absent, and the conveniences of the present moment alone regarded. Thus we often find districts spoiled to all time by this want of foresight, builders plumping down houses of a size and description unfitted to make the most of the several sites available. It would be a pity if Seaford were spoiled as many other places have been; for it has its opportunities, and the old town is picturesque with its simple buildings and grey old church with its quite typical square tower, and pyramidal, red-tiled roof.

They seem to be doing well at Worthing. Quite in contrast to the usual state of things, there are wonderfully few buildings to be let or sold in this pleasant place, notwithstanding the fact that many houses have recently been erected in the western portion of the town, conveniently placed for the new station. The Worthing builders, in their leisure hours, go down to the sea and play "ducks and drakes" with Jubilee five-pound pieces.

The Brighton Métropôle is a success, and Mr. Waterhouse has placed an ornament on the Brighton sea-front. A certain flatness of effect has been pointed out to me, and if existing is referable to want of contrast somewhere in the façades. Perhaps it is as well to be on the safe side: it is so easy to set powerful contrasts, if one puts one's mind to it at the outset; and a scarcely appreciable tameness arising from too great caution in securing gradation and harmony is excusable. I don't quite see how the buff terracotta crops up when the elevation is almost completed, as if the manufacturer had run short of the red variety. Breadth of effect is not enhanced thereby. In pointing out slight defects, which, after all, have to do with individual taste, more than with strict canons, it will be seen that there is not much with which to find fault, and this is the case. The new hotel adds an extra attraction to the Brighton front, and is very welcome in a place where, as usual in seaside towns, mud houses are the chief wear. The building is eminently expressive of its purpose, which is always a great thing, and without which many authorities would declare a work of architecture to be a mere vanity. The general tone of colour of the elevation is wonderfully soft and pleasing, and many of the details and features are interestingly original, and finely stamped with the individuality of their designer. The whole work is a credit to its architect, an acquisition to Brighton, and should be a fortune to its owners. So much as regards its esteemed design; its internal economy and design I hope to become familiar with on another occasion.

Hove parish church will be one of the finest of modern times. At the corner of The Drive and the Eaton-road, in West Brighton, Mr. Pearson is now erecting a church to become, when complete, the new Hove parish church. It will certainly compare favourably with anything of its class heretofore erected. By the courtesy of Mr. S. Chivers, the clerk of the works, whose skill in church-work has been well established since his connection with Mr. Pearson's grand building at West Croydon—St. Michael's—I have been enabled to inspect the works at Hove. The new church is on an extensive scale, and the degree of elaboration of the mouldings, throughout the design, quite unusual. A beautiful type of Early Decorated has been employed, and Mr. Pearson has thrown all his strength into the work, notwithstanding the fact that the style selected is not such as he himself chose and submitted to his client in the first design. But disappointing as it is to have to abandon one's favourite scheme, all true architects have risen superior to such difficulties, and so, judging by the thought and care displayed in the design of every detail in his building, has the architect of the present church. I was much struck by the beauty of the outlines of every moulding employed. The oak work in the roof too will have a fine effect, being bold and massive, as may be imagined when trusses weigh three tons each, and common rafters, 6 × 5, measure 32ft. in length—a length, by the bye, cut out of solid Sussex oak. The oak was grown near Horsham, I was told, and some fine trees must have been felled for these mighty common rafters. Altogether I was well pleased with my visit to the new building, and feel satisfied that, when complete, it will be pronounced one of the most beautiful churches of modern times.

I was at Ostend recently, and I find this fashionable and rapidly rising watering-place is likely to be much further developed by an English company now in course of formation, for the purpose of purchasing and covering all the principal remaining building sites. Mr. H. Roumieu Gough, F.R.I.B.A., is now in Belgium, and on Monday last had the honour of a lengthy interview with the king, to whom he submitted the details of the scheme, together with designs for some of the intended new buildings, which will include a grand residential club, mansions, flats, and villas, and to these will be added a summer and winter garden, proposed by the King, an aquarium, &c. His Majesty expressed his cordial approval of the scheme, and of the designs submitted. The works will be carried out by Messrs. H. Roumieu Gough and Roberts, of Carlton Chambers, Mr. Herbert A. K. Gribble being associated with them in these, as well as in some other important Continental works.

GOTH.

CHIPS.

The memorial stone of St. Mary's Roman Catholic Church, which is being erected in George-street, Paisley, was laid by Archbishop Eyre on Saturday.

Steps are being taken at Torquay to perpetuate the memory of the late Duchess of Sutherland, and the memorial will be in the shape of a stained-glass window at All Saints' Church, Babbacombe. The subject is "The Holy Woman at the Well."

New schools in Middleton-street, Hull, were formally opened by Mr. Mundella last week. They have an area of 4,840 square yards, and cost £8,416, equal to £10 4s. 3½d. per head.

The Hampshire Field Club visited on Thursday, the 25th ult., Sherborne St. John, Monk Sherborn, and the Vyne, near Basingstoke, Mr. T. W. Shore and Dr. Andrews acting as guides.

Active preparations are now in progress for the construction of the new railway to Easingwold, which is to commence with a junction with the North-Eastern main line at Alne Station, and terminate in Alne-road, at the upper end of Long-street, Easingwold. The contractor, Mr. W. E. Death, of London, has just commenced the works.

St. Michael's Bassishaw, in Basinghall-street, E.C., one of Wren's churches, was reopened last week, after internal decoration, carried out by Messrs. Campbell, Smith, and Co., under the direction of Messrs. George and W. R. Low, architects. Various structural repairs have been executed at the same time by Mr. Oatley, contractor, also from designs and specifications by Messrs. Low.

CONTEMPORARY ART WORKERS AND MANUFACTURERS.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

MR. JAMES HILL, the well-known City locksmith and wholesale and export ironmonger, is a native of Glasgow, and came to London in 1866. He commenced business on his own account in 1870, in Upper Thames-street, where he remained until the growth of the concern necessitated removal to larger premises in Queen Victoria-street. Mr. Hill's specialities in locks, door furniture, fanlight and skylight gearing, sash and casement fittings, &c., &c., are largely used by many of the leading architects and builders at home and abroad. Among many other buildings where his specialities are in use may be mentioned the National Liberal Club, Whitehall-place, under Mr. Waterhouse, architect; the Great-Eastern Railway Hotel, Liverpool-street, under Mr. Barry, architect; the Hôtel Métropole, Monte Carlo, under Messrs. Giles, Gough, and Trollope, architects; the Hotel des Anglais, Nice; Las Palmas Hotel, Canary Islands; the new Hotel, Madeira; Hotel Australia, Sydney; the Grand Hotel, Kimberley, South Africa; the Grand Hotel, Johannesburg; the Grand Hotel, Hong Kong, &c., &c. Mr. Hill has executed large contracts for locks and other fittings for numerous public buildings throughout the world—including hospitals, asylums, workhouses, municipal buildings, colleges, churches, libraries, clubs, schools, banks, theatres, railway stations, &c., &c. He has for some years held a Royal warrant as locksmith to Her Majesty, and has carried out many important contracts for various departments of the Government, both at home and in the Colonies. The Knightsbridge Barracks, Hyde Park, and some fifty other military barracks in the United Kingdom, together with numerous post offices and Admiralty buildings, have been fitted throughout with his locks and door furniture. Abroad he has executed many orders for war department buildings, dockyards, embassies, consulates, &c. Mr. Hill during his career has been an extensive traveller, having visited Italy, Greece, and Egypt twice; Palestine once; and the United States of America four times. In October last he started (accompanied by Mrs. Hill) for a trip round the world, from which he has recently returned. He visited in succession the leading cities of India, including Bombay, Poonah, Baroda, Jeypore, Delhi, Agra, Cawnpore, Lucknow, Benares, and Calcutta. From India he sailed to Ceylon, and thence to the principal cities in Western Australia, South Australia, Victoria, New South Wales, Queensland, and New Zealand. His route then led him to Penang, Singapore, Hong Kong, Canton, and Shanghai. From China he sailed to Japan, visiting in turn Nagasaki, Kobe, Osaka, Kioto, Yokohama, Tokio, and the far-famed temples and tombs at Nikko. From Yokohama he took passage to San Francisco, thence across the great American Continent to Quebec, returning home by New York to Liverpool. He broke his journey at various interesting points on the American Continent, including Salt Lake City, Denver, Chicago, Niagara Falls, Toronto, Ottawa, and Montreal. Mr. Hill contested Brixton in the Liberal interest in 1887, his opponent being the Marquis of Carmarthen, and he may enter the arena of politics again. In January last he took into partnership his joint-managers, Mr. E. J. How and Mr. Henry King, who for many years had rendered him valuable and faithful services. We understand, however, that the title of the firm remains unaltered. During the past few years his business has rapidly increased, and a new department has lately been added for the development of his patent fanlight, lantern-light, and skylight ventilating gearing. This latest speciality of his is already commending itself to many of our leading architects and Government engineers, and has been fitted throughout the New Savoy Hotel, the Polytechnic, Regent-street; the new publishing and printing offices of the *Queen*, the *Field*, and the *Law Times*; Prince's Club, Knightsbridge; Fulham New Town Hall; the Post-office Savings Bank new buildings, Queen Victoria-street; and many other public buildings at home and abroad. Mr. Hill's portrait is by Mr. R. Lang Sims, 437, Brixton-road.

Our next portrait is that of Mr. Henry Bassant, parquet-floor manufacturer, of 87, Charlotte-street, Fitzroy-square, W. He came to London from Faversham in 1862, when 19 years of age, and learnt the business at Mr. Steinitz, at Camberwell. He was afterwards with Messrs. Howard and Sons, of Berners-street, for many years, and then started on his own account in 1879, and since that time, owing to the cheapness and good quality of his work, which has gained him five gold and silver medals from the Society of Architects, his business has now developed into a very extensive one. Among many works that he has been intrusted with, we may mention those at Earl Beauchamp's, Earl of Aberdeen's large Indian music room, Earl of Rosebery, Lord Norreys, the Duke of Sutherland's yacht, Admiral Inglefield, Sir Henry James, Q.C., and many others, altogether too numerous to refer to here. Mr. Bassant's photo. is by the London Stereoscopic Company.

Mr. H. F. Oscar Timme (partner in Rottman, Strome and Co., manufacturers of the Japanese leather-paper for wall decoration) was born in 1848, at Coblenz on the Rhine, and educated there. He entered on a commercial career in the year 1866, at Barmen, in Rhenish Prussia. In 1869 he went to Havre (Normandy) to extend his knowledge of the French language, but was obliged to leave that country in consequence of the War between France and Germany in 1870. He joined the German Army (8th Artillery Regiment at Coblenz) in June of that year, took part in the siege at Metz, and was later on severely wounded before Amiens. In 1871 Mr. Timme came to England to make himself acquainted with the commerce and language of this country. In 1873 he established the firm of Boseck and Timme (in conjunction with his then partner, Mr. C. F. Boseck) in London. In 1875 he became a naturalised British subject. When Mr. Alex. Rottmann went to Japan early in 1882 to develop the manufacture of leather-papers for wall decoration, Mr. Timme undertook to act as his agent in Europe. Finding the Japanese Department growing in importance very soon, he joined the firm of Rottmann, Strome and Co., in Yokohama, as a partner, at the end of 1882, and established then the London house. Mr. Timme has ever since given particular attention to the artistic and practical development of the leather-paper trade, for which speciality his firm is so well known in every civilised country of the globe. Mr Timme's portrait was taken by the Stereoscopic Company, Cheapside.

We represent the firm of Messrs. Young and Marten, Caledonian Works, Stratford, London, E., by giving a portrait of Mr. Harry Holdich Marten, the sole proprietor of the business, and also one of Mr. Edward Montague Edwards, his able and enterprising manager. Messrs. Young and Marten style themselves "merchants and manufacturers." The business is essentially one of purveying for the building, plumbing, and decorating trades. In fact, at their Stratford depots any conceivable article required in the construction of any class of building can be obtained. A very extensive stock is kept in every department, and the firm have gained the reputation of supplying a good article at a low figure. They have several specialities which are much in demand, notably their iron and sanitary departments. They also manufacture several specialities themselves; perhaps the most interesting is in the glass department. Leadlight glazing forms a special feature. The head office of the firm is at their Broadway establishment, with which is connected the iron, marble, and builder's ironmongery departments and showrooms, containing every variety of mantels, overmantels, kitchen ranges, grates, and sanitary goods. The projected showrooms, for all kinds of gasfittings, chandeliers, hall lamps, brackets, globes, &c., and paper hangings, will be *en suite* with the showrooms as indicated above, in connection with the iron department, and adjoining and connecting with same. Within sight—only 300 yards distant—is the lead, glass, oil, and colour department—namely, in Romford-road and the Grove. Adjoining this is the wholesale plate glass-cutting and sash-glazing department. The bulk of the heavy stock, from which wholesale orders are executed, is kept at the firm's wharf and stores on the Channelsea River, in direct communication with the Thames. On account of the rapid increase of the output, the acquirement of waterside premises became a necessity; and in June, 1889, Messrs. Young and Marten took possession of their new wharf—namely, Caledonian Wharf, Stratford Market, E., (1) to lessen cost of freight on the heavy importations of foreign window glass, sheet zinc, and marble goods; (2) to provide warehouse space for same and the many other products of English manufacture, such as white lead, sheet lead, Staffordshire goods, timber, cement, &c., which are carried considerably cheaper by water than by rail, the initial cost being thus lessened. The business, prior to Mr. Marten's connection with it, was a much smaller concern. His deceased partner, the late Mr. Young, commenced business in Stratford in March, 1872, bringing with him a nucleus from an older established business in Whitechapel Road. In 1880 he was joined by Mr. Marten, and from that year commenced the progress, prosperity, and popularity of the firm. Mr. Edwards has been connected with the firm from the first day of Mr. Young's advent at Stratford, namely—March 5, 1872; and during that time—upwards of nineteen years—has naturally gained a very extensive knowledge of the business in each respective department. Mr. Marten's portrait is from the studio of Mr. J. Edwards, of Hyde Park Corner, and Mr. E. M. Edwards's photograph was produced by Mr. W. G. Stone, Stratford, E.

Mr. Robert Marr Wharam, of the well-known firm of Messrs Thomas Crapper and Company, manufacturing sanitary engineers, of Chelsea, London, was born in Yorkshire. His early days were spent at Rotherham, where he had ample opportunities of making himself acquainted with the various manufactures of that town, and in which he always exhibited a lively interest. Among these may be mentioned the manufacture of sanitary appliances, with which business he has been more particularly connected for the past twenty years. His parents removed to London in 1867, and in the following year Mr. Wharam was employed by his father, from whom he learned the importance of the correct carrying out of details, and to whose training he attributes a large measure of his subsequent success. Quitting his father's office in July, 1870, he entered the service of Mr. Thomas Crapper, of the above-named firm. We do not now intend to detail the merits of this firm, as we hope at an early date to give our readers a brief record of the successful career of its principal. We will, therefore, content ourselves by stating that they hold the unique position of sanitary, warming, and ventilating engineers by special appointment to His Royal Highness the Prince of Wales. This, of itself, is sufficient proof of the excellence of the respective designs and quality of their appliances. It is apparent that Mr. Wharam's position is no sinecure, for while he is actively engaged in the counting-house, of which he takes the entire management, he is also deeply and usefully interested in the efficiency and progress of the manufacturing department, and some of the sanitary specialities introduced by the firm owe their origin to his efforts. Several excellent catalogues issued by the firm from time to time have been compiled by the subject of this notice. The most cordial relationship has always existed between Mr. Crapper and Mr. Wharam, and it is evident that in this case the aims and objects of the employer and the employed have been identical, resulting in their mutual benefit. This good feeling found practical expression in January 1st, 1888, since which date Mr. Wharam has had a more direct and more substantial interest in the business. The likeness given is the work of Messrs. H. and R. Stiles, of Kensington.

JAPANESE POTTERY.*

A VALUABLE work on Japanese Pottery, illustrated by a very choice series of examples representing the various wares, schools, and kilns in the Bowes collection, has been published by Mr. James L. Bowes, author of several interesting works on the Japanese marks and seals and enamels, and well-known as joint author of the "Keramic Art of Japan," which we noticed at the time of its appearance. Mr. Bowes has, from his position as honorary Consul for Japan at Liverpool, had opportunities for writing a treatise on this subject which very few possess, and his unique collection, formed during a long period, and studied with unremitting zeal, has enabled him to master the subject of classification, and to arrange the wares into groups in accordance with the peculiarities of the styles and

* Japanese Pottery: with Notes and Illustrations. By James L. Bowes, His Imperial Majesty's Hon. Consul for Japan, &c. Liverpool: Edward Howell, Church-street.

potters. Many obstacles and difficulties have to be encountered in studying Japanese art generally. The transference of so many of the art works of Japan to foreign countries after the deposition of the last of the Shoguns has been an impediment in the way of properly classifying, added to which native reports and collections have been exceedingly meagre. Many of the wares thus scattered have been wrongly described, and the author states that their classification has been only achieved by the help of connoisseurs, potters, and friends who have visited him, and who have verified or corrected his own efforts in this direction. Mr. Bowes has availed himself also of a valuable native record upon the arts of Japan, compiled by Mr. Kurskawa Mayori and Mr. Murayama in 1878, which was, no doubt, the authority for the Government reports for the Paris Exhibition of that year, though about the splendid development of art during the 17th and 18th centuries very little is found. Without entering into the long, unpronounceable names of the inventors of Japanese pottery, we will content ourselves with briefly saying that the author recounts the mythological and legendary ideas of the origin of the world entertained by this imaginative race, which are to the effect that heaven and earth were originally not separated; the female and male principles were united; that there was a chaotic state containing all germs, the purest of which rose and formed the heavens, and the heavy and opaque fell downwards and coagulated. Surely a sort of nebular hypothesis. The earth was last formed, and a divine being, Kami, was born in the midst. To this being the title of Kuni-toko-tachi-no-Mikoto was given, and he was the first of the seven Celestial spirits, who each reigned some millions of years. The first three spirits were males and self-born, and the last three had female companions; but there was no sexual intercourse, as they produced each other by mutual contemplation. Then two spirits arose, Izanagi and Izanami, representing the male and female principles, and these, according to the legend, met—the art of love was then invented.

Traditional ware found in mounds and tombs of the time of Jimmu exhibit a form and kind of decoration that appear in most early Phœnician and Trojan relics. These discoveries show a state of art anterior to the use of the potter's wheel, and some interesting illustrations are given. The historical records commence with the 8th century of the Christian era. First we have examples of undecorated ware often used for holding tea in the ceremonial tea parties or *chanoyu* of these ages. But it was not till the 17th century that Japanese art, as we know it, commenced. It was the most brilliant period, and of the various descriptions of faïence and porcelain Mr. Bowes's book furnishes a very complete guide. Many of these splendid works are unmarked and unsigned. The artists worked in factories established by princes like those of the princes of Satsuma. Tangen is the only name on record, but who painted the superb *nishiki* ware of this factory is not known. But we can only glance over the delightful examples described and illustrated, such as the Satsuma, the Hizen, the Kaga, Yamashiro, Owari, and other wares produced from kilns under those names. The photographic illustrations of pottery in the Bowes collection include examples of prehistoric pottery, some fine wares of Kuratzu and Shosin, Jimmu, and Gioki ware. Hizen, Satsuma, Kaga, Owari, are represented by many beautiful examples. The crests and seals, inscriptions, and marks which accompany each kind of ware render the work of the utmost value to the student of Japanese pottery, the connoisseur, and collector. The volume is handsomely printed.

THE SURVEYORS' INSTITUTION.

THE next preliminary examination for the admission of students will be held on Wednesday and Thursday, the 21st and 22nd of January, 1891.

It is proposed to examine candidates from the counties of Lancashire, Cheshire, Yorkshire, Durham, Cumberland, Westmoreland, and Northumberland at Manchester. Candidates from other counties in England and Wales will be examined in London.

The next annual professional examinations for land agents, valuers, and building surveyors (held under the provisions of the Charter, and qualifying for the Fellowship and Associateship of the Institution), will commence on the 16th of March, 1891. Candidates for the professional examinations will be examined in London only. All particulars as to days, subjects, course of examination, prizes, and scholarships can be obtained of the secretary.

The next special-certificate examinations in forestry, sanitary science, and land surveying and levelling will be held on Tuesday, Wednesday, and Thursday, the 16th, 17th, and 18th of June, 1891.

THE TECHNICAL EDUCATION OF ARCHITECTS.

IN his opening address at University College, Gower-street, W.C., last (Thursday) evening, Professor T. Roger Smith, F.R.I.B.A., took as his subject technical education for architects, with special reference to the curriculum drawn up in May last by a special committee of the Architectural Association, and still under consideration by that body, also to the R.I.B.A. examinations. Professor Smith urged that no profession, and especially that of an architect, was a theoretical or collegiate education, however complete by itself, an adequate preparation, and, therefore, he thought it was not likely that pupilage would cease. This was hardly his belief years ago; but the more he had seen and experienced of what could and what could not be learnt under class instruction and under pupilage respectively, the more he was convinced that neither could dispense with the other, although changes in form might take place. A radical change did take place when for the old apprenticeship for seven years was substituted the now customary short term of three years; an alteration, made without supplementing this briefer period by some course of preliminary or concurrent systematic study, that had flooded the profession with young practitioners, not a few of whom were lamentably ignorant. Any young man who was to be an architect ought to take a course of preliminary technical instruction extending over one year at least, and, when practicable, over two, and then to begin his three years as a pupil, continuing part of his theoretical studies in his evenings, and doing the practical work in the day. He proposed, in considering the technical education of an architect, to point out what kind of course such a student should take up. What technical education for architects must consist of should be looked for in the programme of the intermediate and the first examinations established for the Institute of Architects. That education ought, in order to conform to the Institute minimum, to include, at least, drawing, elementary mathematics, and physics, and their application to construction. The history and the actual forms, features, and details of architecture, materials and construction, and sanitation, together with reasonable skill in designing and in preparing working drawings and specifications, and in estimates. Professional practice and dealing with dangerous structures were also required. Passing on to examine the scheme suggested by the special committee of the Architectural Association, Mr. Roger Smith pointed out that it was proposed to be carried out entirely by means of evening work, and entirely by classes and lectures to be established by the Association. He doubted whether the technical part of this programme could be thoroughly and efficiently carried out by evening work alone; and though the conditions under which the Association worked entirely precluded their committee's shaping its programme otherwise, this was a weak point in the proposals. Again, the Association, if it was to become the Architectural College for the Metropolis, must ultimately be prepared to give instruction in all the subjects of study in this programme. Why should not arrangements be made to utilise that college for the Association students, so that they might take up some of those subjects under existing teachers, while others might be from the first taken at Conduit-street? The scheme, if carried out, would need revision; an hour and a half was too long a period for a lecture, though it might not be for a class, and the advantage of two such attendances immediately succeeding each other was very doubtful. The subjects outside the R.I.B.A. programme rather overweighted the course, already very arduous, set before the students in the curriculum. And it seemed open to question whether all these should not be more distinctly set aside as *extra subjects*, both as to position in the programme of education and as to their place in the distribution of time. The programme was indeed too full. This curriculum was, however, an admirable statement of the subjects which students ought to become familiar with; it arranged them very intelligently, and stated them with much clearness, and formed a good statement of what might be definitely included under technical education for architects. Besides, he thought men of cultivation, apt to teach and willing to accept what must necessarily be a modest remuneration for teaching, would not be easy to find. One other sort of person would also be required, though no hint of him nor his office was included in the report, and that was a kind of general superintending and advising head, who should be able to give counsel, direction, sympathy, and encouragement to all the students, and to all the instructors. The lecturer proceeded next to consider the case of those who could spend one or two sessions at University College, London, with a view to show how a man with a year to devote to his studies might there take them up. In the Professor's own class of construction all the more important building materials, such as wood, stone, slate, marble, brick, terracotta, lime, cement, and iron are, he continued, taken up in succession, their strength, weight, durability, and other properties described, and the defects and excellences of bad and good specimens are pointed out, and the part they play in building construction is explained. The general principles of construction, trussing, walling, arching, vaults, domes, and so on are also taken up in succession, and are passed in review, and thus the whole of the subjects named in that part of the programme for the examinations which deals with materials and construction are in turn dealt with. Judging from the published programme, a student going through this course, and doing a proper amount of preparation work at home, ought to be well able to pass the intermediate examination, and the lectures will be adapted to secure that aim. That part of the course of engineering and mechanical technology at University College will with advantage be taken by architectural students, in which the manufacture of iron and steel, and the strength of materials and structures, forms the subject; and also that part of the course of chemical technology which covers the technology of building materials. The instruction given in the architectural or art class takes up the subjects required for the art side of the examinations, but they must be supplemented by drawing and measuring existing buildings, and by other study. In order to enter for the intermediate examination, the student has to do an amount of preliminary work which will be of great value in making him familiar with the forms, features, and ornaments of Classic and of Gothic art, and it will usually be best for him to do that in the office where he is a pupil. Here, in the classroom, the history of the art is pursued, beginning, with Greek (which is taken more in detail than any other part of the course) and the styles on which Greek are founded, and then taking up successively Roman, Basilican, Byzantine, Romanesque, Gothic, Renaissance, and modern art, and, in addition to the history, pointing out the distinctive qualities and features of each, and some of the principles of design which were dominant in the successive periods. Drawing is a subject of which the importance cannot be overrated. In order to be a good architectural draughtsman, a man must learn something of freehand drawing, and should begin within it. An architect's pupil should devote whatever time can be spared from other subjects to figure-drawing, and postpone all geometrical drawing and the study of architectural features till his pupilage. While for this work there are great facilities in the Slade school, forming part of this college, a school of architectural drawing at University College would be of service, and he did not doubt the feasibility of establishing one as soon as a sufficient field of usefulness seems open for it. The study of drawing is calculated not merely to make a man a draughtsman, but to promote his becoming an artist. And among auxiliaries for helping to learn the nature of art he would include the lectures given there by the newly-appointed lecturer on applied art, Mr. Stannus. Having referred to his course of lectures on Professional Practice, intended for men who, however, had some practical training to the profession, he warned his hearers in conclusion not to set too high a value on any form of education *per se*.

BOOKS RECEIVED.

The Chemistry of Iron and Steel-Making, by W. Mattieu Williams, F.C.S., F.R.A.S. (London: Chatto and Windus), is a bulky octavo volume, in which the author has amplified a few lectures—the Cantor Lecturers on Iron and Steel in 1876, and certain articles on the "Rationale of Practical Metallurgy" in *Iron*. The author was formerly chemist in the iron and steel works of Sir John Brown and Co., of Sheffield, and is therefore no mere theorist. His treatise is strictly technological, and relates to the chemical branch; the language simple, and intended to convey to those employed in iron and steel-making the scientific basis of their work; but the ordinary student will also find much of interest and instruction relating to one of our greatest British industries. Mr. Williams treats of the ores of iron; explains what is meant by technical terms such as "reduction" and "dissociation"; describes the operations of fluxing, roasting, calcination; the blast-furnace and the theory of puddling, hammering, and rolling, cementation, Bessemer process, and other operations. The style of exposition is plain, and intended to convey to those engaged in the process of manufacture the principles and science of their vocation. Thus in explaining the theory of "reduction" which formerly existed (that all combustible substances were composed of a basis combined with a fiery principle named "phlogiston," and that when they were burned the fiery matter was driven off, and they became "dephlogisticated"), the writer observes that Dr. Priestley was the first to show what real metallurgical reduction was. He showed that instead of something being taken from the metal to produce the calx (or dephlogisticated metal), there was something in the calx, the removal of which produced the metal—namely, a gas we call oxygen. Thus the idea of "phlogiston" was set aside, and we see the simplest case of reduction of a metal from its oxide, which means the removal of the oxygen and the liberation of the pure metal. The theory of the blast furnace and puddling is rendered intelligible to the workman. Thus it is explained that in the first class of "finery" or "running out fine," it is found "that all the silicon is oxidised and carried away as fusible cinder by combining with the oxidised manganese of the pig, and with some of its oxidised iron or with calcium. Thus one of the impurities of the pig is removed by simple oxidation." Some of the carbon was also oxidised; the graphite carbon is converted into combined carbon, or grey into white iron. "Thus we have an iron well adapted for foundry purposes, the combined carbon giving it fusibility, while the removal of the silicon diminishes its brittleness." The sulphur and phosphorus remain unaffected. The Bessemer process was based on purification of the pig by mere oxidation; but this was not sufficient, for it was found that no amount of exposure of the heated pig-iron to air, even when agitated in the Bessemer converter, can effect the oxidation of the sulphur and phosphorus without oxidising the iron itself. A further advance was made when other agents for oxidising were employed, known as "fettling" materials. So again the author discusses the mystery of the fibre of wrought iron, and shows that after the puddled ball has been hammered and rolled, the granules become drawn out or elongated, each grain being drawn out as a fine wire or fibre. The remarks on steel and its value for structural purposes, and the conclusions of the author, are of interest, as he calls in question the alleged value of steel for boiler-plates, girders, armour-plates, &c. He claims for good soft wrought iron a higher degree of strength and resistance to shocks and strains than steel. A high degree of tenacity has been found to be consistent with weakness under shocks, and it is this peculiarity of steel that Mr. Williams discusses in a philosophical and practical manner. His work is a valuable manual for the iron and steel manufacturer, and for the student of metallurgy. —— *Practical Plane and Solid Geometry*, including Graphic Arithmetic, by J. H. Morris (London: Longmans, Green and Co.), is another textbook in geometry, intended for candidates in the exams. of the Science and Art Department. The author's work on "Geometrical Drawing for Art Students" we recently noticed. The present treatise is clear, the diagrams face the letter-press, and the problems are grouped together according to their similarity of conditions. Numerous examples are worked out, and exercises are given. For the student studying geometry in its many practical applications, we should recommend Mr. Morris's manual.—— *The Timber Merchant and Builder's Vade Mecum*, by George Bousfield; fifth edition, considerably enlarged (William Rider and Son: *Timber Trades Journal* office), is a well-known and useful guide for builders and timber merchants. The tables include all the most useful; the number of feet lineal in a standard, equivalent price per standard and per foot; number of lineal feet per square yard, and price per square and per foot; prices per standard at per square; prices per superficial foot at per cubic foot and per standard, and numerous other tables to facilitate calculation. The rules for reducing foot lineal to standard, and to assist in other calculations respecting timber; the problems that follow for converting quantities, and of every-day practical value to the builder, render the handbook of the greatest use in the office and workshop. Several useful tables and problems have been added to the present edition.—— *The Folkestone, Sandgate, and Hythe Pictorial* (J. English, *Express* Office, Folkestone) is not published on the lines of an archæological guide-book, but as a description of the recent developments and present popularity as a health resort of the three towns forming the old Parliamentary borough of Hythe. The book contains clear, process-block views of Folkestone harbour and beach, the Lees and Church, the Harvey statue, the Warren, Sandgate, and Hythe from recent photographs; the chief fault we have to find with it is its inconvenient form, a paper-covered folio.—— *Hoppus's Measurer*, by W. Richardson, new and revised edition by J. G. Vine (London: Frederick Warne and Co.), is a well-known handbook—a familiar name to every timber merchant and measurer. Mr. Vine's edition contains much new matter and tables, which render this "measurer" not only of value as showing at a glance the solid or superficial contents of any piece of square or round timber, but also the value of timber, stone, &c., cut to any size or scantling, at prices from 1s. 6d. to 10s. per foot cube; the superficial measure and value of board and glass, or other surface. The great use and value of these tables to the measuring surveyor, and to everyone who has to calculate solid or superficial contents, must be apparent. The tedious operation of finding, for example, the number of superficial feet and inches contained in a board of, say, 13ft. long and 5½in., is dispensed with by merely casting the eye over two columns, where the contents in feet, inches, and parts are found immediately. What a saving is it also to be able to find the value of any scantling of timber or stone at any price per foot cube any quantity surveyor or builder's clerk will at once appreciate. The revised edition of the "Measurer" should find a place in every office and pocket.

CHIPS.

Mr. W. W. F. Pullen has been appointed assistant to the professorship of engineering at the University College, Cardiff, for which appointment there were thirty-six applications.

The autumn term of the School of Handicraft, 34, Commercial-street, E., opened on Wednesday evening, when Mr. Hugh Stannus, F.R.I.B.A., delivered the inaugural lecture on "Construction and Decoration."

The man who committed suicide in St. Paul's Cathedral on Sunday has been identified as Edward Easton, aged 38, a surveyor's clerk, of Favart-road, Poole-park, Fulham.

Judge Hughes and a jury tried on Wednesday week an action in Hyde County Court, in which the West-end Building Society, Denton, sued William S. Fidler, surveyor, Haughton, for £50 or the recovery of certain books and documents. It was alleged that the defendant, the former secretary of the society, had not given up a number of books, &c., which had been in his possession and which belonged to the plaintiffs. The jury gave a verdict for the plaintiffs.

The Bishop of Southwell consecrated a new church on Monday at Underwood, in the parish of Selston, near Alfreton, Derbyshire. The church, which is dedicated to St. Michael and All Angels, has been presented to the parish by Earl Cowper, and seats 400 persons.

St. James's Church, West Bromwich, was re-opened on Friday, after being partially restored at a cost of £1,000. Mr. E. Pincher, of West Bromwich, was the architect, and Messrs. Smith and Sons were the contractors.

Engineering Notes.

Glasgow.—The proposed subway, or underground railway, which is to run round the city of Glasgow from Buchanan-street westward to Partick, is to have fifteen stations (eight on the north and seven on the south side of the river) in its course of 6½ miles. The estimated cost of construction is £750,000, which it is proposed should be raised in 75,000 shares of £10 each. It is also proposed that borrowing powers to the extent of £187,500 be obtained to meet extraordinary expenses after completion.

The New Tower Bridge.—The members of the Bridge House Estates Committee of the Corporation of London paid a visit on Tuesday to the works of the new Tower Bridge to inspect the progress which had been made by the contractors, Messrs. Arrol and Co. The total length of the structure, including the approaches, will be 2,640ft. The temporary platform on which to lay the permanent superstructure of the two spans has now been completed on both sides of the river, and the committee were able to traverse the whole distance to the centre abutments. Some 80,000 tons of stone has been used in the construction of these two piers, which are now in a fair way of completion. Satisfactory progress has also been made in the north towers, which, when finished, will stand 275ft. above high water mark. About 31 millions of bricks, 19,500 tons of cement, and 70,500 cubic yards of concrete will be used in the construction of the bridge, independently of 15,000 tons of iron and steel. The contractors fully anticipate being able to comple the works within the time allowed them—viz., the end of 1892. Mr. J. Wolfe Barry, C.E., the engineer, and a member of the firm of Messrs. Arrol and Co., conducted the committee over the works.

ARCHÆOLOGICAL.

Silchester.—Mr. St. John Hope and his fellow-explorers at Silchester, a correspondent of the *Times* states, have found in the foundations of one of the houses recently excavated a dry well, which has proved quite a little museum of antiquities. Some 15ft. down the diggers found an urn-shaped pottery vase, about a foot high, quite intact, but empty. Above it were deposited a great number of iron implements, in a wonderful state of preservation. They seem to have been the tools of a carpenter and a coppersmith or silversmith, with some miscellaneous objects of blacksmith's work thrown in. The principal specimen is a carpenter's plane of quite modern type, three or four axes, retaining their fine cutting edges, chisels and gouges of all shapes and sizes, hammers, adzes, saws, files, &c. There were also a brazier for burning charcoal, two or three anvils of different sizes and shapes, a pair of tongs for lifting crucibles, and a tripod candelabrum. In addition, there are several large bars of iron, a couple of ploughshares, and a broken sword. This is undoubtedly the most important find at Silchester since the discovery of the bronze Roman eagle, now at Strathfieldsaye, some years ago.

The churchyard adjoining St. Mary the Virgin, Aldermanbury, has been laid out as a recreation ground, and has just been opened to the public. Mr. Deputy Rogers is about to provide the new open space with a drinking fountain. The church itself, one of Wren's, has many interesting features. The notorious Judge Jeffreys, who lived in the parish, was buried under the Communion table, and the poet Milton was married in the church to his second wife, Miss Woodcock.

Mr. Goodwin S. Packer is the architect for a proposed new mission room in Southport, with classrooms and house at the back. The size of the room is 51ft. by 33ft. by 20ft. in height, the ceiling, which is flat, will be in ¾in. tongued, grooved, and beaded pitch-pine boards, 4½in. wide, and will be left unvarnished. There will be a dado of glazed bricks, formed into a design by cream and light green coloured bricks, 4ft. 6in. in height, the rest of the wall being in plaster. The foul air will be taken away by four openings in the ceiling; the ventilators on roof and the openings will be connected one to the other with a 9in. pipe, up which the foul air will be drawn. There will be no sole contractor, the different branches being tendered for from quantities by the architect, and let direct to the separate tradesmen. By this method a saving in the cost is expected.

Building Intelligence.

Beverley.—The foundation-stones of a new Wesleyan chapel were laid yesterday (Thursday). The building is from the designs of Messrs. Morley and Woodhouse, of Bradford and Bolton, and is in the Italian style. It is arranged with transepts, and seats 870 people. A minister's vestry, inquiry-room, and kitchen are provided at the rear. The internal woodwork is to be of pitch pine, the gallery front being supported by iron columns, and to have carved wooden panels. A rostrum, with carved panels and capitals, will be provided. The ceiling will be coned and divided into panels with mouldings and enrichments therein. The organ recess will have pilasters with capitals and trusses, supporting an elliptical arch and pediment. The front elevation of the building will be of stone, with ashlar dressings and pilasters surmounted with a carved pediment. The contracts, which are separately let to local men, amount to £3,540.

Birkenhead.—The Corporation of Birkenhead have handed over to Messrs. A. White and Son, of Liverpool, the decoration of the assembly rooms in the Town Hall. This work has by them been intrusted to Mr. T. B. Kennington, figure painter, who has now completed a mural oil fresco representing Learning, Valour, Art, and Commerce bringing gifts to Birkenhead, represented by a female figure. The size of the fresco is 10ft. by 5ft. It is painted above the stage, and is surmounted by the arms of Birkenhead, executed in the old Italian style of ornament. The walls and ceiling are treated in terracotta and buff, verging to a rich maroon in the lower part of the room, the whole being relieved by gilding. The style of decoration is Renaissance, somewhat after the method of the late Alfred Stevens, the entire colour scheme leading up to the central feature, the fresco.

Broxburn, N.B.—By the building of a tower and spire, Broxburn now possesses one of the finest and largest Catholic churches in the east of Scotland. The main body of the church was built in 1880 from designs prepared by Messrs. Shields and Thomson, architects, Edinburgh. The tower and spire have been erected according to plans from the same architects. In the nave and aisles of the church accommodation is found for over 500 persons, while in the organ gallery 50 more may be seated. In the entrance porch, and in continuation of the western aisle, is placed the baptistry. The basin of the font is part of the ancient font of the old Catholic Church of St. Nicholas, as the inscription still indicates. The high altar, which is designed according to the richest form of 15th-century Gothic by Messrs. Pugin and Pugin, London, is constructed out of Caen stone, and decorated with marble. The new tower and spire rise to a height of 110ft.

Crosby, Liverpool.—The foundation stones of a new Wesleyan chapel about to be built in Mersey-road, at a cost of £3,000, were laid on Tuesday. The style is Late Decorated. The chapel is cruciform in plan, with nave, aisle, and transepts, narthex, tower, and spire, octagon chancel and organ chamber. The dimensions are: Narthex, including tower and gallery entrance, 55ft. by 11ft.; nave, 70ft. by 41ft.; transepts, 26ft. by 17ft.; chancel, 28ft. 6in. by 21ft.; and organ chamber, 20ft. by 14ft. 6in. The height of the ridge is 50ft., and to the wall-plate 25ft. At the western side of the chancel are placed vestries, lavatories, and classrooms. The walls are faced with Yorkshire shoddies and Storeton-stone and dressings; the interior part of walls of brick, all the foundations being of solid concrete, the timber-work throughout of pitch-pine, and the roof-timbers unstained and unvarnished. The floors are to be of oak below, set parquetry, and the windows will be filled in with leaded lights to the architects' design. The architects are Messrs. J. F. Doyle and T. W. Doyle, the clerk of the works being Mr. Samuel Gunning. The sole contractor is Mr. S. Webster, of Bootle. The chapel will seat 650 people.

Exeter.—The ceremony of laying the foundation-stone of the chancel of the church of St. Matthew, Newtown, Exeter, was performed on Friday. The work of building the church was commenced about ten years ago; but after the nave, aisles, transepts, and base of the tower had been completed, operations, owing to the want of funds, were suspended. Mr. Medley Fulford, Exeter, is the designer of the chancel, and Mr. Luscombe, Exeter, the contractor for its construction. The style will be Decorated Gothic, and in keeping with the rest of the church. In length the chancel will be 36ft.; in width 22ft. 6in. There will be aisles on either side, two vestries, and an organ chamber over the north chancel aisle. The estimated cost of the whole work, including a new organ, is £2,500. When the chancel is finished there will be additional accommodation provided for 300 persons, so that the seatings will be raised to 930.

Lydford.—The Church of St. Petrock, Lydford, was reopened on Friday by the Bishop of Exeter, after having undergone enlargement and complete restoration. The church was restored in 1873 at a cost of £1,100, when a rectory was added from Mr. G. E. Street's designs at a cost of £5,000. The present work of restoration and enlargement was commenced in the year 1888, when the chancel was restored. In 1889 a new vestry was built, and in the present year a new north aisle, 42ft. by 8ft., and seating about 50 persons, has been added to the church, corresponding with the south aisle opposite. The nave roof has been restored in oak, and under the tower arch a new oak screen has been placed. The architect is Mr. S. Hooper, of Hatherleigh, and the contractor Mr. William Petherick, also of Hatherleigh. The interior carving has been effected by Mr. Harry Hems, of Exeter.

Maidstone.—The Bentliff memorial wing, which has just been added to the museum, was opened by the mayor on Monday. The wing has been built for the reception of the pictures which the late Mr. Bentliff and others have presented to the town, and which are valued at upwards of £40,000. It has a frontage to the street of 45ft., and measuring 56ft. from back to front. On the ground floor are a reference library, 31ft. by 22ft., and a room 54ft. by 20ft., the latter having windows the entire length on its east side and large window at each end. Both these rooms open from a lobby, in which is an oak staircase leading to the floor above, which contains two galleries for the exhibition of pictures, both having top light and connected by arches. The floors throughout are fireproof, and are laid with solid oak blocks. The heating is by hot water, supplemented by open fireplaces with Mansfield stone mantelpieces, and by one in the library, the latter being of Caen stone, also carved. The exterior of the building is designed in conformity with the older wings. The work has been carried out by Mr. Jas. Clements and Mr. Henry Brennan, under the direction of the architect, Mr. Hubert Bensted, of Maidstone.

Sunderland.—New premises have just been erected in Fawcett-street for Messrs. A. Corder and Sons, and from the plans of Mr. Frank Caws. The old building having been burnt out, it was decided to erect the new in fireproof materials throughout, and to dispense with the use of iron as far as possible. No timber has been introduced into floors, walls, and roof; slabs of thick concrete of unusual dimensions have been used. The building is three stories in height, besides attics, and the frontage to the street is red terracotta from Ruabon. The contract for the whole of the building has been carried out by Messrs. D. and J. Ranken. Mr. J. C. Edwards, of Ruabon, manufactured all the terracotta; and the pavement lights were supplied by Messrs. Hayward Brothers and Eckstein, of London.

Spanish-place, W.—The new Roman Catholic Church of St. James, which has superseded the mission building in Spanish-place, Manchester-square, erected a century since, was formally opened on Monday. The building lease for the old structure could not be renewed, and the present site in George-street, immediately behind the old church, was purchased for £30,000. The architects are Messrs. Goldie, Child, and Goldie, of Kensington-square, whose design was selected in competition by the late Mr. James Fergusson, and Messrs. Dove Brothers, of Islington, were the contractors. The style is 13th-century Gothic, with plain lancet windows. The exterior is of Portland and the interior of Bath stone. The nave at present is 104ft. by 28ft., and consists of seven bays, there being space left for extension, when required, and for the erection of a tower. At the end of these seven bays the finishing off is of a temporary character only. The exterior of the transepts is also incomplete, for they are at present covered flat, but it is intended that they shall be finished off with gable-ends, pinnacles, &c. The inner aisles are 10ft. wide each and the outer 8ft. each, while the chancel is 37ft. in length, having the same breadth (28ft.) as the nave. It is paved with mosaic, and has marble steps. The height from the floor to the centre of the vaulting is 60ft. The Lady chapel consists of five bays of 7ft. 7in. each, with a width of 19ft. The triforia are approached by stone steps from the porches, and will accommodate 500 persons, the capacity of the nave being for 1,500. The building is vaulted throughout with stone, and the inner walls are faced with the same material. The columns are of Hopton Wood stone, with shafts of grey fossil marble. Adjoining is a new presbytery.

COMPETITIONS.

Sunderland.—The Corporation of Sunderland recently invited designs for laying out the land on the lower promenade at Roker. The schemes marked "Seaside" were recommended to the Council for approval, and have been approved by that body. The proposed scheme comprises restaurants, shops, stalls, covered shelters, bazaars, studios, café, reading-rooms, smoke-rooms, promenades, public cloak-rooms and conveniences, and a large saloon. The materials proposed are cement and iron, with zinc roofs. On opening the sealed envelopes, the successful architect was found to be Mr. Thos. R. Milburn, A.R.I.B.A., 20, Bridge-street, Sunderland.

CHIPS.

The new post-office at Wokingham, near Reading, was formally opened on Friday. It has been built by Mr. E. C. Hughes, of that town.

St. Nicholas's Church, Birmingham, has been reopened, after being internally decorated from the designs by Messrs. Cotton and Bidlake, architects.

We understand that Mr. William Landless, architect to the Leeds School Board, has been appointed assessor by the Oldham School Board in connection with a competition for a school.

On Monday last the opening of the People's Park at Kingstown, Co. Dublin, was performed by the Chairman of the Commissioners, Mr. John L. Robinson, A.R.H.A., M.R.I.A. Mr. Robinson has designed the laying out of the park, and acted as honorary architect for the stand, house in the grounds, the lodges, and other buildings which form part of the scheme.

The committee for the erection of a monument to William Tell has decided in favour of the site in front of the Town-hall of Altorf. The hero is to be represented with his crossbow in his hand, and in the garb of the Swiss peasantry of his time, but without his son. The statue is to be of bronze, and will stand more than 10ft. high, while the pedestal is to be of stone, quarried in the Canton of Uri, and adorned with four reliefs.

On Friday Lady Vivian laid the foundation-stone of a new mission church for the populous districts of Plasmarl and Landore. The building is to be of native stone, rough cast on the outside and plastered to a smooth surface inside, with the chancel arch window and doors of red brick quoins. The nave is to be 60ft. by 25ft. 6in., the front gable being capped by a bell turret. Accommodation is provided for 300, and the contract is for about £600. The work is to be carried out from the designs and under the superintendence of Messrs. J. Buckley Wilson, F.R.I.B.A., and Glendinning Moxham, M.S.A., architects, Swansea. Messrs. Gustavus Bros. are the builders.

The recent excavations for the new Money Order Office in St. Martin's-le-Grand have led to the discovery not only of by far the most perfect piece of the Roman wall laid bare in recent times, but also of a complete outline of the old town ditch which defended London during the Middle Ages. It was outside the wall and separated from the foundations of that structure by a space of some 8ft. or 9ft.; the ditch has a width of about 75ft.

St. Thomas's Church, Stourbridge, was opened last week, after extensive additions and alterations by Messrs. Cotton and Bidlake, architects, of Birmingham.

The contract for the construction of the commercial graving dock at Barry has been let to Mr. John Jackson, of London. The entire works connected with the new dock will cost about £130,000, and must be completed in twelve months. The consulting engineer is Mr. J. Wolfe Barry, London, and the work will be carried out under the supervision of Mr. John Robinson, C.E., the resident engineer of the Barry Company. The dock will be 700ft. in length and 85ft. in width.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

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The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLI., XLIX., L., LI., LIII., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—C. and Co.—A. W. K.—W. R.—W. O. and Co.—J. D. and Co.—A. R. T.—F. W. R.—J. F. and Co.—T. B., jun.

Correspondence.

WHITEFIELD TABERNACLE COMPETITION.

To the Editor of the BUILDING NEWS.

SIR,—From the report of Professor Smith, the assessor in this case, he appears to have given the first premium to a design, "Winged Heart," which has exceeded the frontage to Tottenham Court-road by some 6ft. above what was shown by figures on the site plan issued to competitors. As one who kept strictly to these figures, I should like to ask by what authority "Winged Heart" adopted a greater frontage. The assessor also states that "Lux Mundi" has done the same thing, which he notices "with regret, but thinks it does not infringe the spirit of the 'Instructions,'" and in commenting on "Hearing and Seeing," he speaks of it as having encroached upon the side land for steps and areas. This seems contradictory, as he sanctions it in the two designs referred to.

Every one knows that where figured dimensions are given, they are to be adhered to, unless competitors are told to check them, of which nothing was said in the Instructions, and we all know that in a restricted site an extra width of 6ft. makes all the difference in planning, and in this case it was assumed that in fixing the dimensions the committee had some special reason for not giving, what may or may not be, the actual available frontage.

This was the view I took, and also seven other competitors. I therefore protested against the award, solely on the above grounds, and maintain that "Winged Heart" was disqualified, and that the premiums should have been awarded to the two best designs which had adhered to the Instructions.

It is to be regretted that the assessor did not take this view, as his decision cannot but shake the faith of competitors in the employment of an arbitrator.

With the conduct of the committee throughout the competition I have no word of complaint, but give them my thanks for their fair and straightforward action. A COMPETITOR.

THE ARCHITECTURAL ASSOCIATION.

SIR,—I have not had time to follow closely the nature of the various discussions which have led us to the present position, and which threatens our connection with the Architectural Association by doubling, without any special reason, our annual subscription. To a casual observer it is obvious that upon the roll-call of the Architectural Association there are innumerable names of architects of both position and extensive practice who have no ends to serve and no special benefit to derive by retaining membership of the Association; who practically see no return for the existing annual subscription of ten shillings and sixpence, and were it not for a pure and unalloyed love of architectural dilettantism, would cease to be members. The financial strain of actual practice is only sensibly and fully appreciated by those who are actually in practice; the strain of the collar and bit is an unknown quantity to the bystander. An architect in practice and a professional member of the institute can derive little or no benefit from membership of the juvenile institution in question; but, on the contrary, very considerable benefit can accrue to the Architectural Association by retaining on its list of members the many distinguished and honoured names it now posesses. The professional architect has an annual demand made upon his purse to the extent of from two to four guineas for his membership of the Royal Institute of British Architects, and other societies, from a variety of reasons or of motive he may feel compelled to join, make similar demands. In short, it becomes a matter of financial policy to see that some measurably adequate returns are made to justify these outgoings. The Association, apparently, for reasons yet unfathomed, appear to think otherwise.

I have not been yet made aware as to how far the resolutions affecting the doubling of the subscription have been carried; and I am anxious to be accurately informed on this point. But whatever views official members of the Association may foster with regard to the advantages accruing to members of the Association, I have no hesitation in saying that no such advantages accrue to architects in practice, and who are members, and that there is nothing whatever to justify their remaining members with a subscription increased to one guinea per annum. Personally, I do not attend more than once a year at any of the meetings of the Association, and innumerable other architects frequent the Association even less. Such being so, the idea of doubling the subscription appears ludicrous. I should be very sorry to see the association awake from its daydream like Samson, shorn of its locks and its strength in pursuance of its present suicidal policy; but, as a word of warning, I feel it incumbent to add that, if the subscription is raised as it is in some quarters intended, I, for one, should not hesitate to withdraw from membership of so august an assembly.—I am, &c.

CHAS. R. GUY HALL.

13, St. Alban's-road, Kensington.

A REAL BLACK DIAMOND!

SIR,—I think the following is too good to be lost to the profession. It is taken from a board to be seen on the L.B. and S.C.R. main line:—

H—— G——

"Architect, Builder, and Coal Merchant."

Comment is needless; but the idea of mixing up coals and plans is a novelty to me.—I am, &c.,

SPENCER W. GRANT.

Moorgate Station Buildings, 63, Finsbury-pavement, E.C., Sept 29.

THE LATE MR. SMALES.

SIR,—There are several notable errors in the obituary notice in your last of Mr. T. C. Smales, recently deceased in America. I presume the paragraph was copied from some Transatlantic paper.

He never was in the British army; he was articled on leaving school to his uncle, an architect practising in Kendal and London, and subsequently for some years served in the offices of architects in Bolton and Wrexham, and for two or more years with Mr. Arthur Vernon, of Wycombe. It reads very strange to learn that a few years ago he entered the offices of an architectural firm as student, after very considerable prior experience, and his talents and abilities in his profession were considerable.—I am, &c.,

D. BRADE.

22, Buckingham-street, Strand.

"THERE'S WORK FOR ALL TO DO."

SIR,—The Co-operative Builders I was speaking of were started nearly three years ago in the following manner: The contractor for a large building failed when it was about half completed; this led the architect for the work to consider whether it would not be possible to keep the men together and carry on the work without the intervention of a contractor. This, with the consent of the owner, who agreed to pay weekly according to the time-sheets and invoices for material, was done, and proved satisfactory in every way. The successful termination of this work encouraged the architect to have other work done in a similar manner, with the important addition that the men were to share in the profits, and be able to invest their savings in the business at which they were working.

The shares are £1 each, and no workman can share in the profits until he has worked 400 hours for the firm. An important feature in this business is the training of boys to fill up vacancies. I believe the rules as to co-operation have had to be modified: the control and authority of the foreman over the men and his power to discharge them must be maintained, while the architect has control over the foreman. The point which most pleases me in this scheme is the elimination of competition where there is a desire on the part of the employer and the architect for good work, there is not the least necessity for competition, as is shown by the successful working of the co-operative builders. When, as is customary in competition, the lowest tender is accepted, very careful supervision is required on the part of the architect to see that the work is properly carried out. He will be saved this trouble by working on the lines of the co-operative builders; he will also be able to alter the drawings freely as the work proceeds, and he will save his client the quantity surveyor's commission.

As capital accumulates, the employer would not be required to pay so often as once a week, but by this means business can be commenced with a very small capital. All accounts and time-sheets relative to the work are open to the employer's inspection; a percentage for working expenses and profit is charged at each payment. Only an approximate estimate need be given, but, of course, there is nothing to prevent a contract being entered into not to exceed a certain sum.—I am, &c., C. F. M.

SIR,—Your correspondent "Currente Calamo," strikes an entirely false note in his letter. An architect's work, it seems to me, consists in designing and carrying out building operations in the best manner, and in the interest of his client, and the moment he becomes a contracting party he is in reality a builder, and as an architect ceases to exist.—I am, &c.,

Sept. 30. PANSA.

ZINC IN CONTACT WITH BRICKWORK.

SIR,—In your issue of Sept. 12 is a paragraph in your "Office Table" quoted from a German paper, in which the writer states that in building the Berlin city market halls a portion of the zincwork which rested upon brick walls rapidly decayed, and suggested as a preventive the introduction of *roofing*-felt between the brickwork and the zinc.

There may be something peculiar in German bricks or mortar; but we have had a large experience in zincwork in England, and have never found any premature decay in the turns-up or flashings against brickwork.

As to the introduction of roofing-felt under zinc, your readers should be cautioned against the recommendation. We were called in to report on the defects of a large flat, not laid under our superintendence, under the zinc of which *roofing*-felt had been laid over the boarding of the flat. No other cause of the decay of the zinc could be found than that the acids of the tar-felt had acted chemically on the zinc, and pitted it all over with small holes. No doubt hair-felt, not tar roofing-felt, would have been

harmless, if unnecessary; but *roofing*-felt is always worked up with coarse tar, and should for this purpose be avoided.—We are, &c.,

A. and C. Harston.

15, Leadenhall-street, London, E.C., Sept. 25.

ORDNANCE RULE.

Sir,—The use of Ordnance Maps has now become so general that it would be a great boon if the mathematical instrument makers made a pocket rule, on the inside bevelled edges of which were one inch and six inches to a mile, and the $\frac{1}{500}$ and $\frac{1}{2500}$ scales.

This arrangement would occupy one side of the rule, and the other could be utilised by the most commonly-used scales—viz., $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, and one inch.

Should chain scales be needed, they could be placed on the flat part of the rule, or on the edge at the back of the bevelled one.

The great need, however, is the handy reference to the "Ordnance scales" on the pocket rule.—I am, &c.,

James Jerman, Fellow R.I.B.A.

5, Bedford-circus, Exeter, Sept. 29.

CLAYBURY ASYLUM.

Sir,—In your issue of Sept. 26, in the note on Claybury Asylum entrance-gates, you state that the asylum is being built by Mr. Lovatt; this is incorrect. The asylum buildings are being built by Mr. E. Gabbutt, of Liverpool, the foundations having been put in by Mr. H. Lovatt, of Wolverhampton.—I am, &c.

Claybury, Sept. 30. H. R. Bishop.

Intercommunication.

QUESTIONS.

[10394.]—**Solid Wood Floors.**—I have heard of ordinary flooring boards being nailed to coke breeze concrete as a cheap substitute for solid block flooring. Can anyone say from experience whether there is a risk of rot setting-in by water penetrating the joints and getting underneath when floor is washed, &c.? Has this ever affected solid block flooring too?—Learner.

[10395.]—**Parquetry Corridors and the Building Acts.**—In some industrial dwellings in the metropolis it is proposed to lay the corridors with concrete, and to lay on this boarding which will in turn carry a parquet flooring. The district surveyor objects to this as an infringement of the Metropolitan Building Act of 1855, Section 22, which provides that in every dwelling of such character "the floors of the lobbies, corridors, passages, and landings, and also the flights of stairs shall be of stone or other fireproof material, and carried by supports of a fireproof material." Can parquetry on concrete be regarded as "fireproof" within the meaning of the Act, or must the surface be of tiles or concrete? I omitted to state that in the centre of this concrete of passages are chases which will receive iron pipes for heating the buildings.—Jeremiah.

[10396.]—**Day-work in the Profession.**—How many hours are reckoned to the day by the profession, and can any of your readers state what is considered a day in attending a Court of Law?—Doubtful.

[10397.]—**Quantities.** — In case of a proprietor demanding a copy of quantities on architect sending in final statement for work carried out, can he legally force the architect to produce one?—Resistant.

REPLIES.

[10333.]—**Reredos and Rood Screen.**—Answering one of your querists, I might mention there are two very fine modern screens to be seen in Brighton: one a recent erection in the old parish church of St. Nicholas, designed in a Flowing Decorated style, with a handsome cross or rood; the other a rood-beam and cross in St. Martin's church. The reredos in the latter church is an exceedingly fine one in three tiers, richly canopied at the top. The east window is placed high. The pulpit has a very elegantly-carved canopy rising to a considerable height. The arcades are of brick. The whole of the chancel is harmoniously fitted and in a good style. In the Church of St. Peter, Leigham Court-road, Streatham, is to be seen also a very light and well-designed metal screen and floriated cross over. A reredos should properly belong to, and grow out of, the altar, and for this reason I think it best to confine it in width to that extent in small churches. In larger churches the reredos may be widened by side bays carried up from the ground, these side bays projecting beyond the altar on either side. This arrangement is the one adopted at St. Martin's Church.—G. H. G.

[10382.]—**Fireproof Floors.**—I notice in your issue of last week that Mr. Potter gives some details concerning the combination of concrete with iron. It is, however, an ascertained fact that this combination has serious faults. Captain Shaw has given orders to his men not to enter any building on fire where concrete is used in conjunction with iron, because of the liability of the concrete to part company with the iron and fall down in masses. This tendency has been experimentally proved by Mr. W. H. Stanger, C.E., whose report came into my hands some time ago, and which I inclose for the perusal of your correspondent. It shows that in a furnace worked up to 2,000° the best quality concrete, applied as a protective coating to iron girders, began to crumble away in 53 minutes. Doulton-Peto tiles, under the same conditions, lasted over 4 hours; but slag-wool (which is, to a great extent, an air-harbouring body) resisted the heat for over 7 hours until the fire was raked out, at which time the iron girders showed no deflection.—James Christie.

[10374.]—**Stoppage of Work.**—I scarcely think "G. H. G." has gone far enough in stating that the contractor can only charge for work and labour actually done when the works are stopped, as I believe he has a further reasonable claim for profit that would be likely to accrue were the work carried through, for on the principle that it takes two to make a bargain, one party to it cannot break the same without the consent of the other, and compensation allowed. This also applies to the architect's commission.—Tolop.

[10381.]—**Roof—Graphic Solution.**—The load rests on a king-post truss at three points—at the foot of each principal rafter, at the centre or purlin, and at the ridge. If we assume that $\frac{1}{2}$ W is supported at the centre or purlin point, and a $\frac{1}{4}$ W at the foot of rafter, and also at ridge, we have the resultant force at the foot $\frac{3}{4}$ W upwards, since the upward vertical pressure of the wall has to be added. This distribution is one of those found in treatises. It being assumed that the pressure on middle prop is $\frac{1}{2}$ W, that at the extremities of rafter $\frac{1}{4}$ W each, the rafter being supposed to be jointed in the middle, and therefore the weight of each half of rafter is equally divided between its extremities But, of course, any distribution at certain points is more or less arbitrary.—G. H. G.

[10382.]—**Altar Rail.**—I must thank "H. W." for his reply, which is suggestive of what may be done. I have seen several chancels, but they vary to so great an extent in the number of steps, width of footpace, and other details, that no rule can be deduced. I will certainly visit the church he names. The chancel is that of a country church, and is about 19ft. by 40ft. According to "H. W.," the altar-rail should be about 12ft. from top step—this distance, I presume, supposes a passage behind altar. The taste of the clergyman is, as he says, exceedingly self-assertive; but if there was a common rule for a given-sized church, he could not exercise his opinion.—A. H.

[10384.]—**Wood Block Floor.**—I should prefer pitch, or some bituminous composition, to lay the blocks on; no smell need be feared. I should recommend "Trenwith" to apply to Mr. Roger L. Lowe, whose wood block flooring is one of the best. The blocks are fastened to a concrete bed by a patented composition, which checks dry-rot and prevents dampness.—G. H. G.

[10387.]—**Windows.**—I do not think J. W. Simpson has a remedy against his neighbour for slightly enlarging his windows, provided the windows are practically coincident with the old one, for it has been ruled that a window cannot be obstructed if the obstruction interferes with an existing right to light. The case of "Aynsley v. Glover" applies to such a case.—G. H. G.

[10389.]—**Drainage.**—It is usual to provide both an inlet and outlet in connection with the main inspection manhole at the disconnecting trap, for the ventilation of the manhole and the drain. The outlet may be either at the high end of the drain, coming into the manhole, or it may be off the manhole. If a soil-pipe delivers into the high end of the drain, it may be made to serve as the ventilating pipe for the drain; but in many cases some plumbers and sanitary engineers prefer to trap the soil-pipe at its foot, and provide a separate ventilating pipe for the drain. I prefer to do so in my own practice as far as possible. 2. Gully-traps might be used for rain-water pipes leading into a rainwater tank, where they are intended to catch leaves, soot, and sand, and prevent such passing into the tank.—W. P. Buchan.

[10390.]—**Pointed Architecture.**—It has been suggested with some reason, that the requirements of vaulting, as in the case of narrow vaults intersecting circular vaults with level ridges, necessitated the pointed arch (see Fergusson's "Handbook.") As to the origin of the pointed form, the Assyrians used the pointed arch, and we know the Etrurians and Pelasgi used it in their tombs. In the south of France the pointed arch was used for vaults, because it allowed the covering of roof to be laid immediately upon the vault, as in the church at Carcassone—there was less fitting-in necessary. In the construction of domes with pendentives, the pointed form was also adopted in the latter, as avoiding the weakness of circular arches.—G. H. G.

[10393.]—**Wood Block Flooring.**—A wood block floor would answer very well for a public market hall; it can be laid to gradients for draining, and can be made impervious. For concerts and lectures the wood paving would be better than asphalte or brick. "C. W. S." would do well to apply to any of the makers of floors of this description. For his other particulars, R. L. Lowe, W. Duffy, and the Westminster Patent Flooring Company are well-known makers of wood block floors.—G. H. G.

At the Court House, Stockport, Mr. Arnold Taylor, an inspector of the Local Government Board, held an inquiry on Friday relating to an application by the corporation of Stockport to borrow £15,560 for the construction of new streets and bridges, £9,000 for works of street improvement, and £5,500 for the erection of stables. The recently-appointed borough surveyor (Mr. Atkinson) and the late borough surveyor (Mr. A. M. Fowler) gave evidence as to the plans.

On Saturday evening, at St. Michael's Church, Maidstone, the reredos erected to the memory of the late Mr. F. Scudamore was unveiled. Sir Arthur Blomfield, the original architect of the church, designed the reredos, which has been carried out by Messrs. A. N. Pryer and Co., of West Borough. The decorative work has been executed by Messrs. Heaton, Butler, and Baynes, of Garrick-street, London.

Broseley parish church was reopened last week after the erection of choir-stalls, new heating apparatus, and a new vestry, and the reconstruction of the organ, the latter work being carried out by Messrs. Nicholson, of Worcester.

WATER SUPPLY AND SANITARY MATTERS.

Blyth.—After a delay covering many years, the old Slake, which forms the boundary between Cowpen and Blyth, is being covered in. The Slake is now really a small tributary of the River Blyth, originally flat, low-lying land, covered at each recurring tide by a shallow stream of water. A portion of the ground on which the lower part of Cowpen Quay is built has been reclaimed from the Slake, and now only a tidal stream of some 30ft. broad has been left. This stream it is which it is now proposed to inclose within a culvert, and so leave the land open for the erection of dwelling houses, &c. The contract has been let to Mr. J. Carrick, of Durham, and the work is now commenced. The culvert for 1,141ft. of its length will have an internal diameter of 5ft., while the higher portion, extending 495ft., will have an inside measurement of 3ft. by 2ft.

Newcastle-under-Lyme.—On Tuesday, the 23rd Sept., a public inquiry was held at the Town-hall, Newcastle-under-Lyme, by Mr. Codrington, one of the inspectors of the Local Government Board, respecting an application for powers to borrow £8,500 for permanent works, consisting of main sewers, irrigation works extension, and various public improvements. Mr. Jas. Pattison, borough surveyor, explained the plans and the nature of the work proposed to be done. There were one or two minor objections by representatives of the Ratepayers' Association. The inquiry, which was a lengthy business, lasted from 10.30 a.m. till 5.30 in the evening. On the following day the inspector visited the sewage works, and the sites of various other works proposed to be carried out.

CHIPS.

The current number of *A. A. Notes* gives publicity to the rumour that Mr. Norman Shaw, R.A., intends to retire from active work almost at once.

As we anticipated last week, when noticing the proposed practical retirement of Mr. Lyster, the engineer to the Liverpool Docks Board, that body have agreed to the scheme under which the salary of Mr. G. F. Lyster, as engineer, will be reduced from £4,500 to £3,000 per annum, that of his son, Mr. G. A. Lyster, being increased from £500 to £1,500 a year, Mr. Le Mesurier, chief assistant to the engineer, receiving an advance from £850 to £1,000.

A working men's Conservative club is being built at Thorverton, and will be opened in November. Mr. Allen, of Exeter, is the architect, and Mr. Westcott, the builder.

On Sunday the new post and telegraph office, which has been erected at Queengate, Inverness, at a cost of over £14,000, was formally opened for business.

Cradley Church has been seriously injured by mining operations, and Mr. J. M. Gething, architect, of Kidderminster, has been called in to report thereon. It is found necessary to rebuild vestries and make other alterations.

The Congregational Church, Grafton-square, Clapham, has just been reopened after repairs and decorative works, which have been executed by Messrs. Pitman and Son, of Newgate-street, under the superintendence of Messrs. Searle and Hayes, the architects.

A Goliath over-head travelling crane, with a capability for lifting 20-ton blocks of stone or marble a height of 25ft. clear and carrying them to any part of the work, was tested at Mr. Harry Hems's studios at Exeter on Friday. The work has been carried out by Mr. Benjamin Johnson, Mill-lane Works, Bramley, near Leeds. Amongst other commissions at home and abroad, Mr. Harry Hems has just had the sculpture for the new Municipal Buildings at Bombay intrusted to him. These public offices are being erected from the designs of Mr. F. W. Stevens, F.R.I.B.A., by Messrs. Warden and Co., contractors. Much of the sculpture will be of colossal size, notably an emblematic female figure of India upwards of 12ft. high.

Mr. W. A. Shade, the American painter, who has resided in Rome for the last ten years, died at Lucerne on Friday night. Mr. Shade studied at Düsseldorf, Munich, Paris, and Rome, and was an idealist. One of his pictures, "First Love," was bought by the Berlin National Gallery; another, "The Power of Love," by the Empress Frederick. He also painted a series of family portraits for Prince Wiel. "The Flight in Egypt" is his chief work.

The committee engaged in erecting a monument to Dr. Parry, the late Bishop of Dover, met on Monday at Mr. Forsyth's studio to inspect the clay model of the recumbent effigy of the late bishop, about to be erected in marble in the nave of Canterbury Cathedral. The further details of the altar-tomb, on which the effigy is to rest, were left to be arranged by a sub-committee.

Our Office Table.

The *conversazione* to be given this (Friday) evening at the Town Hall, Westminster, to inaugurate the forty-fourth session of the Architectural Association, promises to be an unusually successful gathering of its class. The programme is an attractive one, and includes a reception by the President, Mr. Leonard Stokes, in the large hall, to be converted for the occasion into a drawing-room, and lit by electricity; selections of music by the Coldstream Guards; illustrations and demonstrations of hypnotism by Dr. George André, of the Physiological Institute of France; and the exhibits will consist of prize drawings of the session, the Oxfordshire Excursion photographs, water-colours and other sketches on loan, and specimens of the arts and crafts allied to architecture; while rumours are being floated by members of the committee that the refreshment and cloak-room arrangements will be "better than usual."

The coming session of the Association promises to be one of great importance to that body, as the report of the Committee on the future of that body, so fully discussed last session, comes up for further consideration at the meetings of the 31st inst. and Nov. 14th. The syllabus of papers to be read includes the following subjects:—"Opaque Glass," by Mr. Powell; "Wood and Stone Carving," by Messrs. Pomeroy, Stephens, and Frith; "Renaissance Art," by Mr. J. M. Brydon; "Marble Mosaic," by Messrs. Horsley and Spence; "Home-like Houses," by Mr. Ernest Newton; "Notes by the Travelling Student," by Mr. Percy Smith; and others by Messrs. Basil Champneys, Prior, and Scott Morton.

The seventh session of the Society of Architects will be opened on Tuesday, November 11th, when the President, Mr. Robert Walker, of Cork, will deliver his inaugural address at the Society's room, St. James's Hall, Piccadilly. The succeeding meetings will be held on Tuesday evenings, November 25th, December 9th, January 13th and 27th, 1891; February 10th and 24th, March 10th and 24th, April 14th, May 12th, and June 23rd, the last being the annual general meeting. An excellent and attractive syllabus is, we hear, in course of preparation.

Mr. G. A. T. Middleton is about to give a series of twelve lectures in preparation for the R.I.B.A. examinations, commencing on Thursday week, the 15th inst., each being about two hours in length. Those on the "History of Architecture" and the "Development of Ornament" will be illustrated by lantern views. On November 18th Mr. Middleton delivers an address at the Alderley Edge Art Club, Manchester; on the 27th of that month he will speak at Kidderminster on "The Homes of our Forefathers"; on December 1st before the Birmingham and Midland Institute, on "Ancient History Written in Stone"; and on January 8th he will give a lecture before the Cardiff Naturalists' Society on "English History Written in Stone."

The manager of the Ecclesiastical Art Exhibition, which is held every year concurrently with the Church Congress, and was opened at Hull on Monday, has succeeded in bringing together a very remarkable collection of objects in the loan collection, which includes nearly 600 exhibits. Church plate is represented by communion vessels from Holy Trinity and St. Mary's, Hull; St. Mary's, Beverley; Preston-in-Holderness; Burton Agnes; St. Michael-le-Belfrey, York; Swine; Guisborough; Howden; Bugthorpe; Pontefract; and Middleton. Several private owners have also contributed ancient examples from their collections. Local ecclesiology is well represented by a number of drawings, engravings, and books, having reference to the churches and monastic remains of the neighbourhood. Some fine specimens of early printed books, a few of which are also of interest on account of their bindings, are also included. Embroidery, both ancient and modern, is well represented in the exhibits of the East Grinstead School of Embroidery, the school in connection with St. Stephen's Orphanage, York, and the specimens lent by various private owners. Mr. H. E. Franks and Mr. M. C. Peck lend a collection of rubbings of monumental brasses, and Messrs. Smith and Brodrick, architects, of Hull, exhibit views of buildings carried out by their firm.

The Worshipful Company of Plumbers met at the City Guildhall on Monday to swear in their officers for the ensuing year—viz., Mr. W. H. Bishop, master, Mr. Charles Hudson, warden, and Mr. Philip Wilkinson, renter warden. Sir Philip Magnus referred to the large increase in the number of students attending the plumbing classes in connection with the City and Guilds Institute, stating that 569 students had presented themselves at the last examination held by the institute. He said the institute welcomed the graded scheme formulated by the company for the training of plumbers, commencing at the time of their apprenticeship and providing for examinations at three stages, preliminary, intermediate, and final, the last entitling successful candidates to enrolment under the rules of the National Registration of Qualified Plumbers.

A deputation from the Plumstead District Board of Works waited on the London County Council on Tuesday to ask them to increase the sum they are willing to give towards the proposed purchase of Bostall Wood, as an addition to Bostall Heath, already under the charge of the latter body, as an open space. The wood consists chiefly of pines, covering a hill of 60 acres, presenting a picturesque appearance. Sir Julian Goldsmid, M.P., who holds the property in trust, is willing to part with it to the County Council for £200 an acre, and has refused to accept a larger sum from the builders, who are already laying out streets close to the spot, and are ready to cover the ground with houses. The Parks and Open Spaces Committee have decided, however, to come to a conclusion to offer £150 an acre for the land, the locality to contribute a fair proportion of the cost. The owner, in virtue of his trust, cannot reduce his demand, and under the deadlock thus caused the negotiations may, it is feared by the residents in the locality, fall through.

A vein of ricolite and green onyx is being quarried in Western Gran County, New Mexico, and has been tried in the new Alhambra Theatre at Chicago. The vein is said to be 50ft. wide and over a mile in length, and the stone is got in large blocks. The colours are dark green, cream, pink, and salmon, and also striped and mottled; in fact it is said to contain some of the "lost colours" in stone, while its toughness enables it to be carved. Blocks of the new onyx will be used in the construction of the new Mexico Exhibition pavilion at the forthcoming World's Fair at Chicago, when its decorative and commercial values can be tested.

The annual report of the Pearl Life Assurance Company, presented at the twenty-sixth annual general meeting, held September 26th, states that 370,851 policies were issued during the past twelve months, representing a new annual premium income of £154,999 1s. 8½d. The total income for the past financial year amounted to £272,707 0s. 2d., and exceeded that of the previous year by £19,771 2s. 5½d., being an increase of more than 40 per cent. over that of the previous year. A dividend of 10 per cent. has been recommended and paid.

Mr. J. E. Hodgson, R.A., has been elected president of the next annual congress of the National Association for the Advancement of Art and its Application to Industry, which will be held at Birmingham from the 4th to the 8th of November next.

The chapel of St. Clare's Convent, Pantasaph, has lately received a gift of the 14 Stations of the Cross which have been recently erected. The wall spaces between the nave lancet windows have been selected for the niches in which the sculptured groups of the Stations have been placed. The material used for the niches and the sculpture is a soft-coloured stone, and the groups are carved in high relief. The Stations were executed by Mr. Boulton, of Cheltenham, from the designs of Mr. Edmund Kirby, of Liverpool.

A new branch library, in the parish of Battersea, was opened on Tuesday night by Mr. J. S. Gilliat, M.P. The central library stands on Lavender-hill, and the two branches are at Lammas Hall and in Lurline-gardens. The former branch contains 5,000 volumes, and the new one in Lurline-gardens, Victoria-road, opens with 4,200 books. On Wednesday evening the Public Library for Rotherhithe was inaugurated by the Right Hon. Sir John Lubbock, M.P., while the new Clerkenwell Library will be opened on Saturday in next week, the 11th inst. The last-named building, which was designed by Messrs. Karslake and Mortimer, was illustrated by us on May 17, 1889.

MEETINGS FOR THE ENSUING WEEK.

Monday.—Society of Engineers. "Sewer Ventilation," by W. Santo Crimp. 7.30 p.m.
Liverpool Architectural Society. Opening Address by the President, T. Mellard Reade, F.S.A. 7 p.m.
Glasgow Architectural Association. "The Middle Period of Greek Architecture," by Henry Mitchell. 8 p.m.

National Registration of Plumbers.—Plumbers Registered since 1st September, 1890.

LONDON JOURNEYMAN.

Plenty, E. W., 44, Hazelwood-road, St. James-street, Walthamstow.

PROVINCIAL MASTERS.

Fisher, C., 21, Market-place, Loughborough.
Hope, G., 15, Salisbury-place, Edinburgh, N.B.
Hunter, H., 11, Farndale-terrace, Thornton-street, West Hartlepool.
Mason, J. A., 1, Strathern-villas, St. Saviour's-hill, Leicester.
Pallett, W., 58, Oxenden-street, Leicester.
Snuggs, E. A., 26, Sheet-street, Windsor.
Thornton, C., Mill-street, Oakham.

PROVINCIAL JOURNEYMEN.

Bramham, J., 3, Warehouse-hill, Call-lane, Leeds.
Curson, J. W., Wellington-terrace, Ber-street, Gates, Norwich.
Gordon, T. McG., 21, Victoria-street, Galashiels, N.B.
Lester, C. J., 2, Millfield-place, Blackpool, Cork.
Longfellow, T., 27, South Terrace-cottages, Headingley, Leeds.
Nickalls, J., 28, Pavilion-road, Foord, Folkestone.
O'Brien, M., 100, Friar-street, Cork.
Rutledge, P., Fermoy, co. Cork.
Speirs, J., 32, Albert-place, Galashiels, N.B.

CHIPS.

The great scheme of church extension inaugurated by the Bishop of Peterborough in 1875 is now practically completed. Four new parishes have been created, and four new churches erected. The consecration of the last of the latter—St. Paul's—took place yesterday (Thursday), when the Bishop preached.

The remains of Archbishop Tenison's throne, to which public attention has recently been directed by Mr. G. Cavendish Bentinck, M.P., are being put together under the direction of the Dean and Chapter of Canterbury. It is stated that the throne, when completed, will be re-erected in the Cathedral Library.

A memorial has been placed in the churchyard at Cove, near Tiverton, to the late rector, the Rev. William Knight. It takes the form of a Cornish cross, being a *fac simile* of the fragmentary Celtic cross at St. Columb Major. It is made of Hopton Wood stone, and is surrounded by a curb of grey Dartmoor granite. It is the work of Mr. Harry Hems, of Exeter.

A memorial stone of a new Wesleyan chapel was laid at Twerton, near Bath, on Tuesday. The chapel will be built of Twerton lias, with Bath stone dressings, will seat 375 persons, and will cost, with schoolroom in basement, £2,400.

Several improvements are about to be made at Cradley Church, which has fallen into a bad state of repair, partly in consequence of mining operations in the neighbourhood. Choir stalls will be provided, and a new choir vestry built, and the ventilation improved. Mr. J. M. Gething is the architect.

At the annual meeting of the Tylers and Bricklayers' Company, held on Monday evening, the following officers were elected for the ensuing year:—Master, George Edward Tanner; upper warden, Samuel Sansom; renter warden, Ellis Marsland, M.S.A.

A new Goldsmiths' Institute has been erected at Lewisham, and special attention has been paid to the ventilation, the extraction of the vitiated air being effected by the latest improved form of Messrs. Robert Boyle and Son's patent self-acting air-pump ventilators.

Additions are being made to the infirmary at Warrington, including the provision of a top-lighted operation theatre, and the building of a lift from the ground floor to others, and a new staircase. Mr. Beckett, of Hartford, is the contractor.

Holloway's Pills.—The Great Need.—The blood is the life, and on its purity depends our health, if not our existence. These Pills thoroughly cleanse this vital fluid from all contaminations, and strengthen and invigorate the whole system, healthily stimulate sluggish organs, and establish order of circulation and secretion throughout every part of the body.

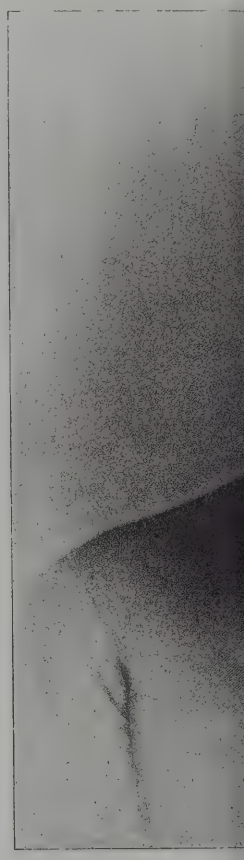
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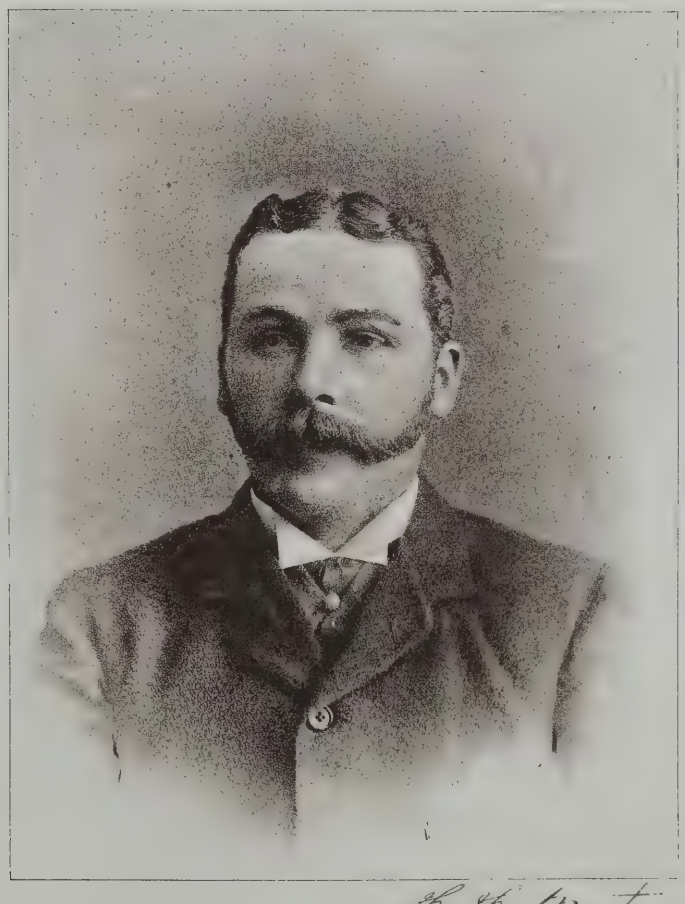
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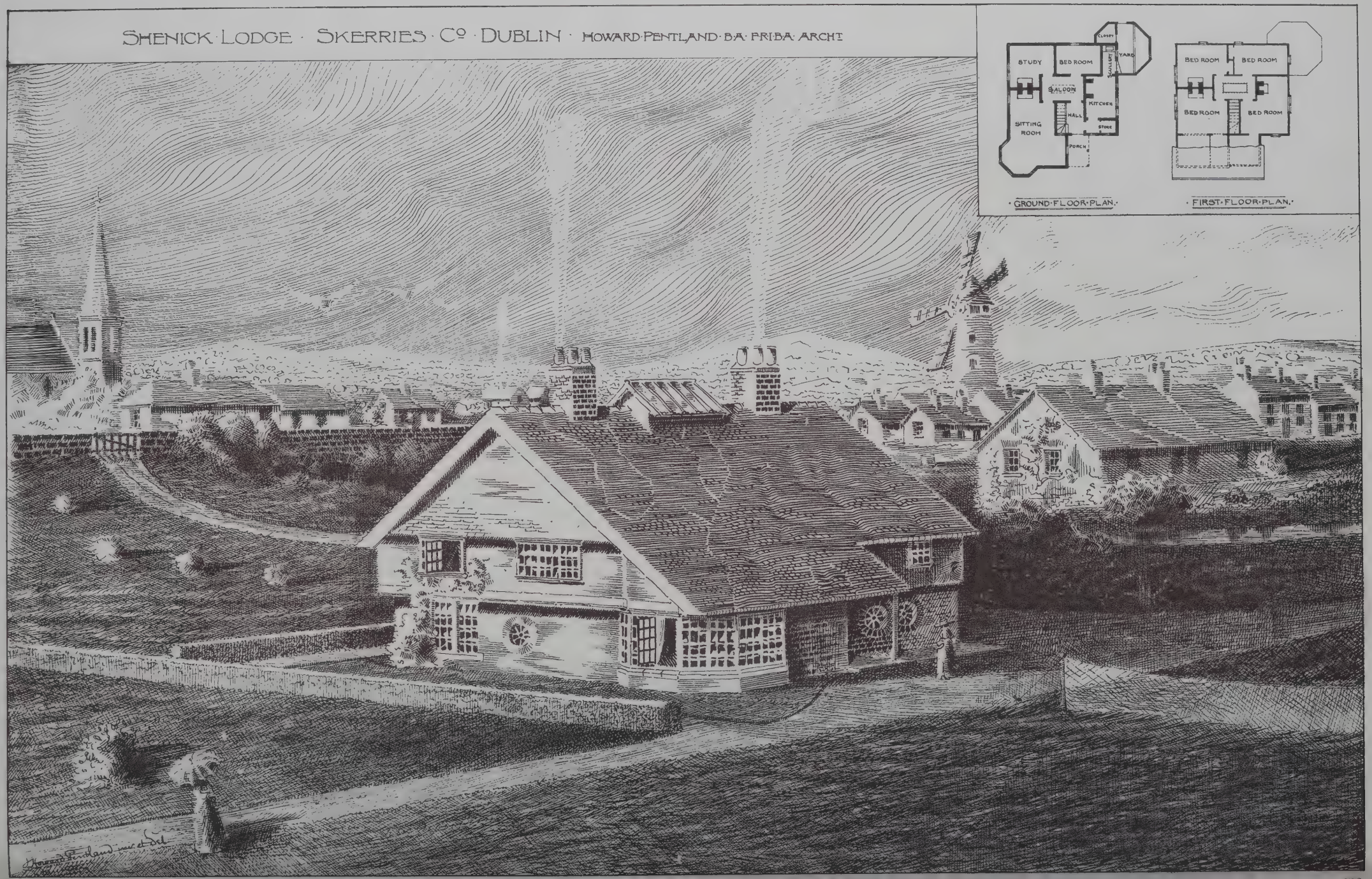
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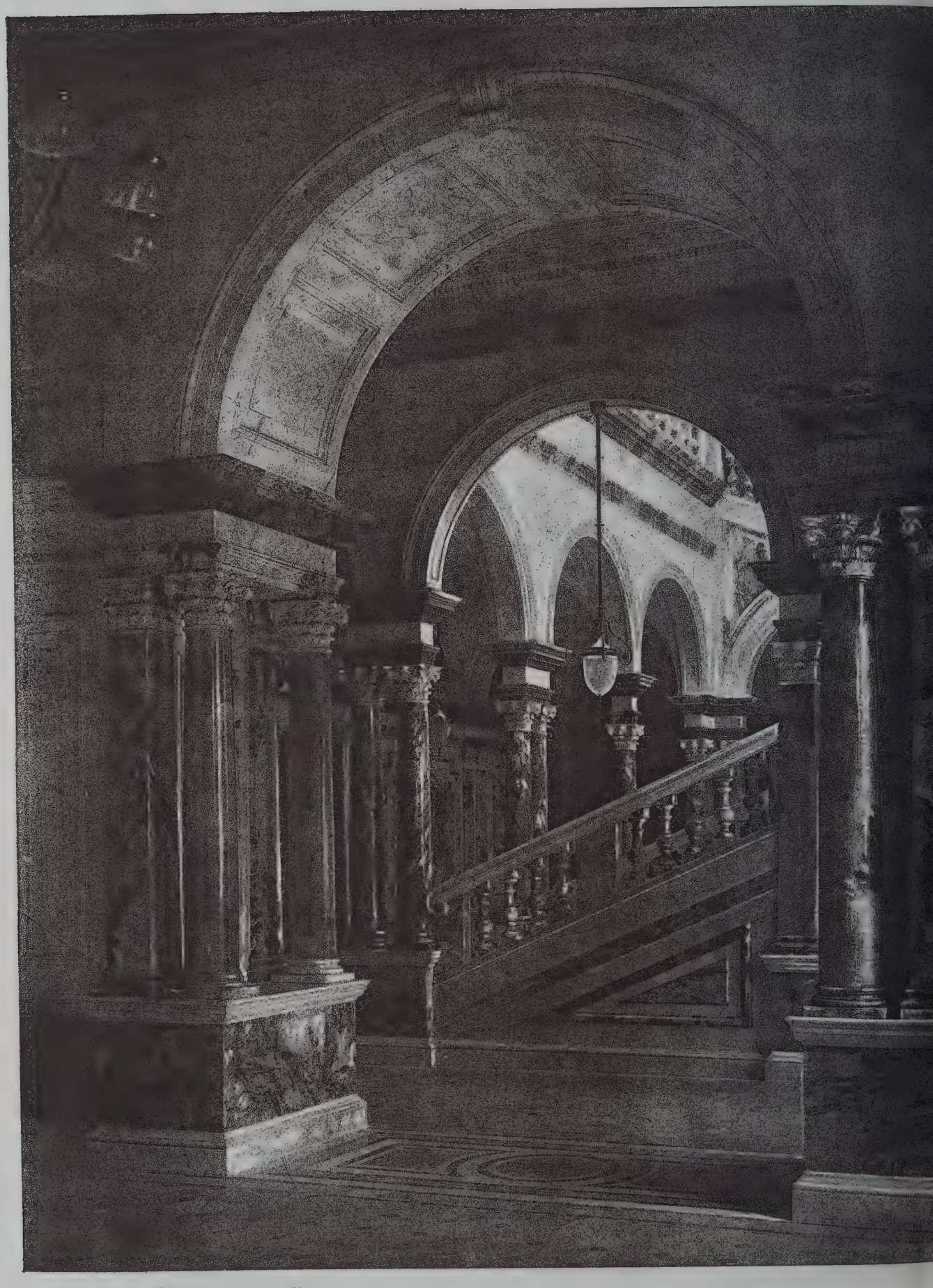
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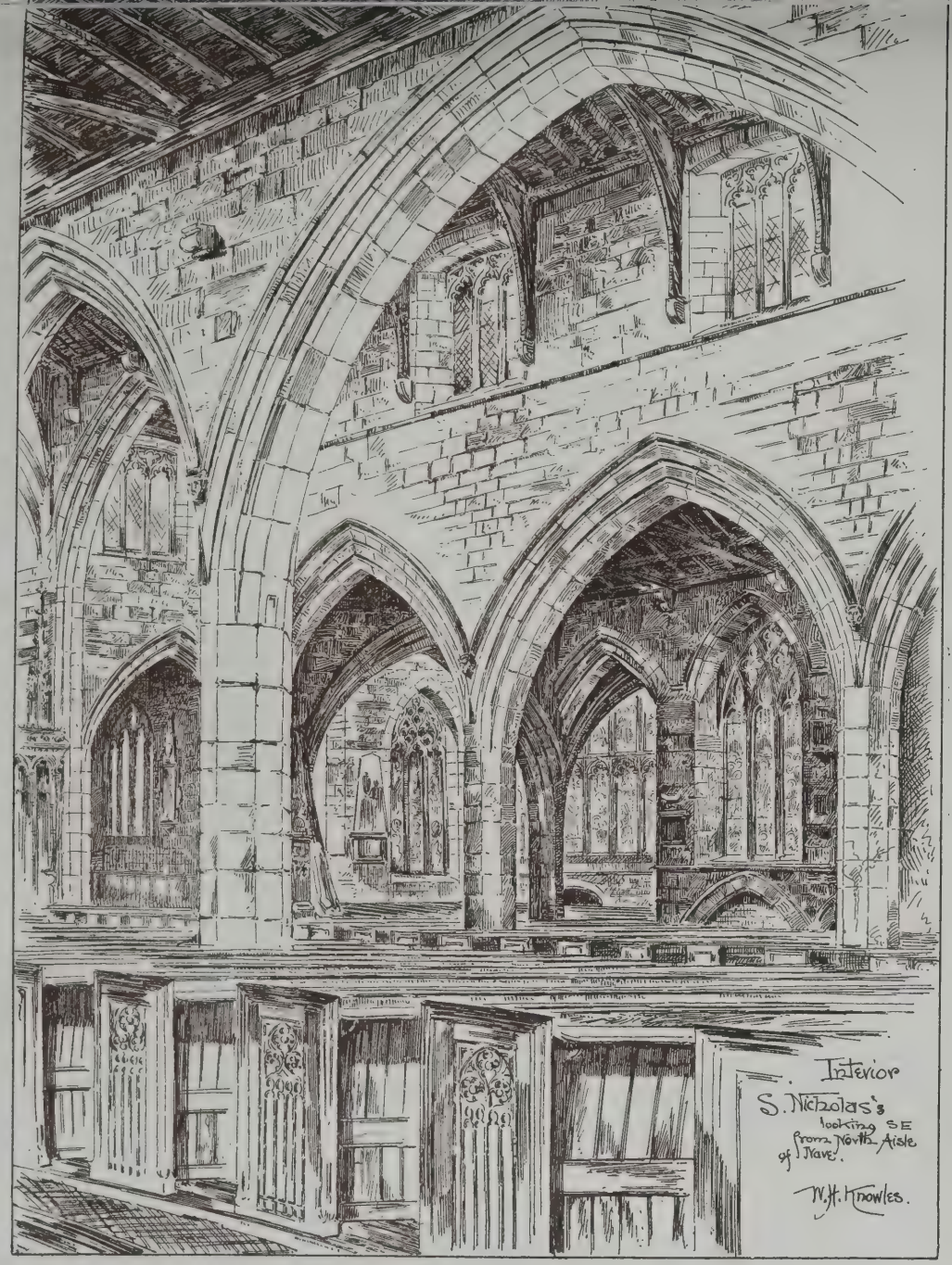
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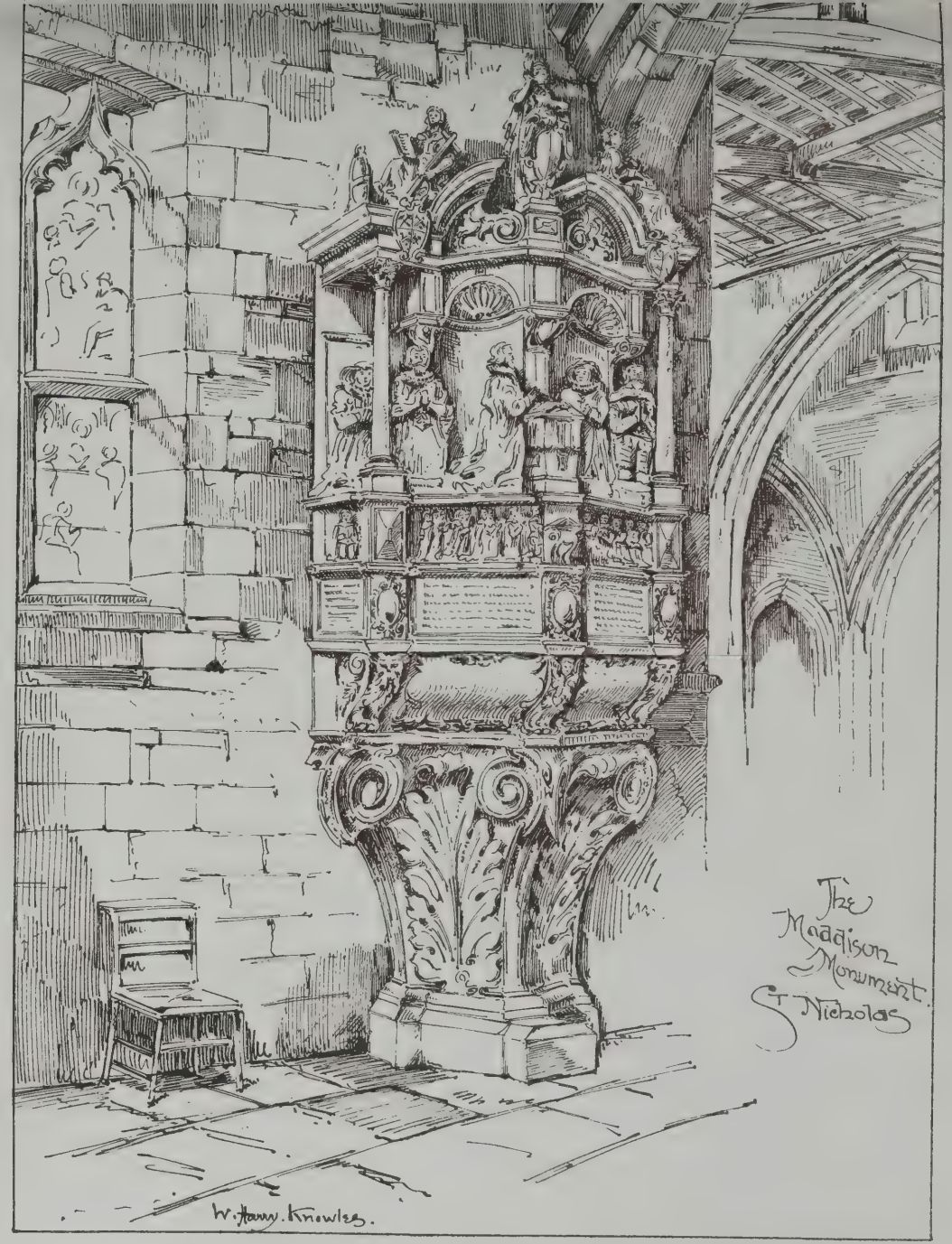


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St. Jude's Church, Southwark.

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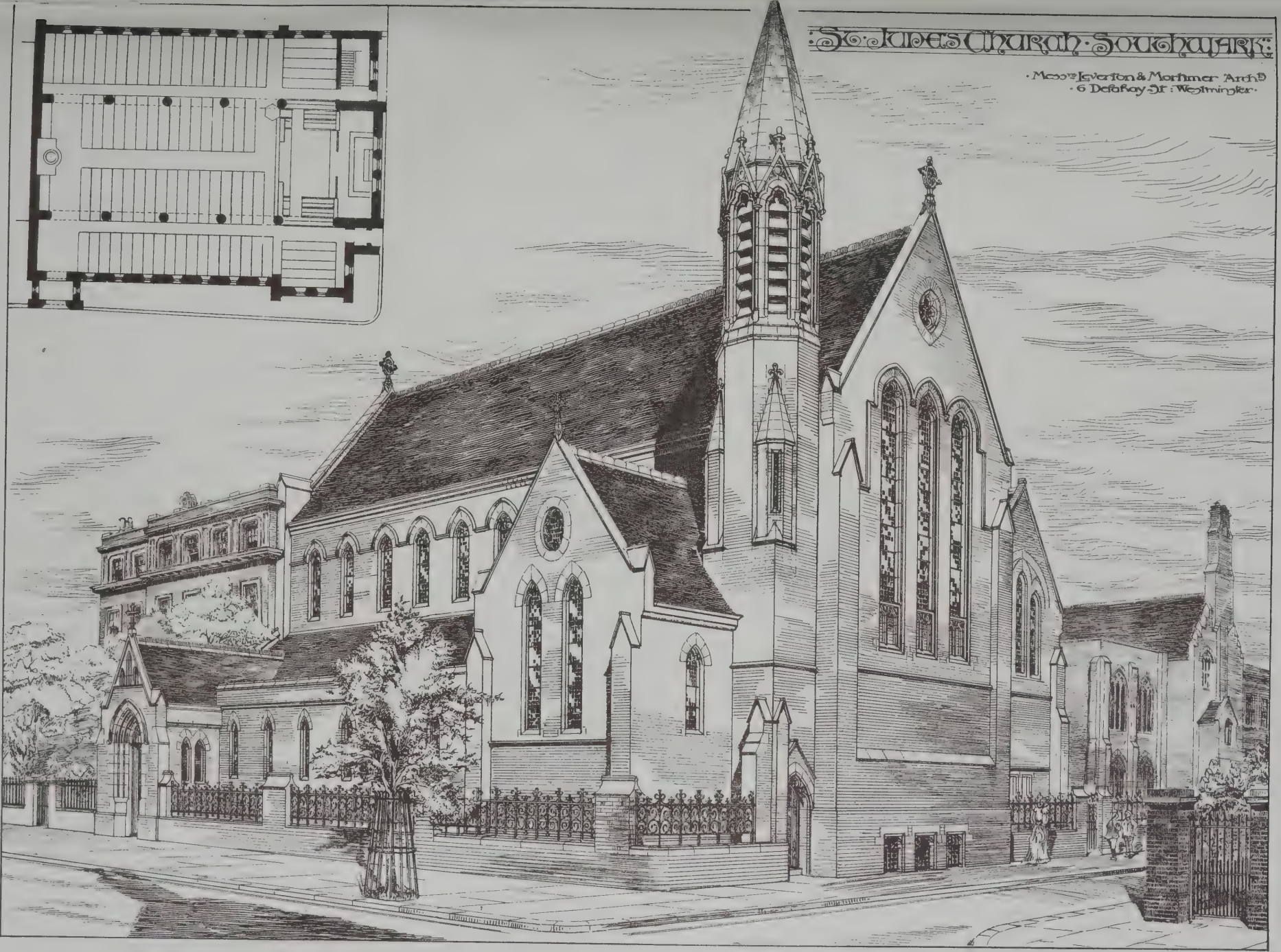


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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LIX.—No. 1866.

FRIDAY, OCTOBER 10, 1890.

WHITEFIELD MEMORIAL CHAPEL COMPETITION.

LAST week we gave an abstract of Professor T. Roger Smith's report on this competition, which describes the leading features of each of the ten designs. The remarkable conclusion of that report, as contained in the last paragraph, was so contrary to what we had expected after reading the comments on the designs, that we concluded the assessor must have had some good reasons for rejecting so unceremoniously all the plans he had pronounced good and of artistic design for four others of much less merit. Our inspection of the designs has certainly failed to reveal any such reasons. The ground assigned for the assessor's astonishing conclusion is that as it is virtually impossible to erect buildings for the amount named, £15,000, therefore he had to select a design not upon its merits, but the one which he thinks is most economical. We must confess this seems to us a rather curious and illogical conclusion to draw, after speaking of three of the designs—"Lux Mundi," "Forward," and "Taxis"—in the highest terms and as remarkable for artistic merit. Why should designs of architectural merit be set aside for those confessedly of a lower order of merit for the sake of economy?

The sum named by the committee is quite insufficient, no doubt, as some of the competitors hinted at the commencement; but the inadequacy of the amount was the fault of the committee, and should not be made the ground for setting aside the best designs. An architectural assessor's duty is to weigh the merits of the designs, and certainly to award the first prize to that design which commends itself to his mind with a reasonable regard to economy. If it is impossible to erect buildings giving the amount of accommodation required with the necessary elegance, dignity, and convenience for the amount named, the assessor is justified in acting upon this opinion and select one that appears to fulfil these desiderata. There is a further consideration which some of our correspondents have pointed out—namely, that the design to which the first premium has been given exceeds by 6ft. the frontage to Tottenham Court-road or that shown by figures on the plan issued to competitors (102ft.), or about 670ft. superficial more in area. No doubt the extra 6ft. would be a valuable addition, and would have allowed other competitors to improve the hall; but as the printed instruction was decisive on this point, those competitors who complied with it should at least have fair play accorded them. On what ground then, we ask, does Professor Smith favour this excess of frontage in the case of 'Winged Heart" when "Lux Mundi," which is acknowledged to be of great merit, does not exceed the 102ft.? While we are astonished at the decision on the grounds above stated, we still more wonder after an inspection of the design awarded the first premium. "Winged Heart" (by F. Boreham) is florid in its style and details, and wanting in some of the external characteristics of buildings of this class. The front elevation rather strongly put us in mind of a commercial building; the front towards Tottenham Court-road especially. We freely admit there is much that is good in the plan. The chapel in the rear is rectangular, about 94ft. by 68ft., the axis north and south. Out of the corners rectangular staircases are taken, leaving a recess on the north side for a corridor behind the pulpit, and another recess on the south side which is fitted with seats. These are arranged in four rectangular blocks with three passages. The accommodation on the ground floor is 930 seats, in the gallery 585, and an addition of 50 in the choir, making a total of 1,565 sittings. The gallery plan shows a semicircular gallery at the south end, with the organ at the north end over the platform. Two areas on the east side separate the chapel from Toplady Hall and afford light; between these areas there is a central corridor of good width, giving access to the chapel through the ground floor from Tottenham Court-road. The hall is a rectangle, 101ft. by 51ft., the ground floor being occupied by classrooms on the left side of the corridor, and by a church parlour on the right-hand side, in front of these being six offices towards the main road; the upper floor of hall has a gallery on three sides. The basement is devoted to the general school room and infant school under the chapel and stores. The approaches to the hall are by wide staircases. The interior is illustrated by an ink perspective, which shows a clerestory, a spandrel roof carried on iron pillars and arches, lean-to aisle roofs of open timber principals, and ceiled between. Exteriorly red brick and stone in dressings are shown, the style being a kind of round-arched Italian. The square pinnacles carried up between window bays are extravagant features, and the fenestration looks crowded; a bold circular entrance in the Tottenham Court-road is the only visible feature in front which leads one to imagine the chapel behind. The steep hipped roof is broken by the pinnacles, and two ventilators on the ridge over the hall. The south elevation includes the gabled end of the chapel, which has a large wheel window flanked by square turrets. There are good points in the plan: the staircases and approaches are ample and the lighting good, and the author shows means of ventilation in the roofs of the two main buildings. The author's estimate is £15,000, a certainly low figure.

"Lux Mundi," which receives the second premium, is a masterly design in its conception and details. Mr. J. M. Brydon, the author, has grouped his main blocks in such a manner that while each building emphasises its purpose, they combine to form a composition marked by much dignity and refinement. The drawings are the most artistic; nothing can be nicer than the interior view, looking across the chapel beneath the dome. The main blocks are connected by the staircases; the chapel, about 86ft. long by 73ft. wide, has its two eastern corners canted off, and the blocks of circular seats are arranged radially to the rostrum or platform in the centre of the west side, there being four passages converging to the pulpit, with the vestry behind. The gallery plan is semicircular and extends round the three sides upon columns of good proportions standing on pedestals. These columns are arranged hexagonally, carrying arches and a domical ceiling of the same form with a clerestory arrangement. The dome is also pierced by openings. A choir gallery and organs on each side are divided by a screen from the interior, making a very pleasing feature. The hall block is traversed by a wide corridor to the chapel; on one side are placed the secretary's rooms, and on the other the church parlour, the front having four offices. The hall over measures 99ft. by 45ft., and has a platform at the south end. The form of the chapel and the spacing of the columns are such as to allow everyone to see and hear the minister, and to offer the least obstruction, a condition to which Nonconformists attach the greatest value. "Lux Mundi" has certainly solved this part of the problem; the lighting is ample, the seating arranged upon the most economical plan, and the requirements fairly met. The style, in red brick and stone or terracotta, is a Late English Renaissance, very suitable and divested of all unnecessary details, and the author puts his estimate at within 10 per cent. of the amount fixed.

"Taxis" (by Mr. Jas. Cubitt, in conjunction with his former pupil, Mr. Littlewood) is another very clever and picturesque design in its plan and exterior treatment. The drawings are artistically executed in light tinting, and display a pleasing handling of Flemish Gothic, though perhaps the front elevation towards Tottenham Court-road is scarcely imposing enough. The plan of chapel, which is exceedingly clever, is an irregular octagon, the east and west sides being slightly recessed; the western end has the platform and pulpit, with organ behind. The total diameter this way is 92ft., and the width across 88ft. Within this octagon, six columns, arranged at the angles of a regular hexagon, carry the gallery, the sides of which, instead of being straight, are curved outwards or towards the outer walls, and producing a ground plan like a sexfoil, and having a diameter of 68ft. The seats follow the curves. The six columns carry six Tudor Pointed arches, and a clerestory with a groined ceiling above. The author has adopted the "Hall type" of plan, with the best results. Staircases at each angle of the chapel and a passage round gallery are shown. The seating below is ingeniously contrived to reduce to a minimum obstruction of the columns, the seats are arranged in three blocks with two radial passages from the platform and a surrounding passage. The floor slopes up at the back a few inches. The front block has the arrangements well studied: there is a large, well-lighted schoolroom below, three offices, a church parlour, and classrooms in ground floor on each side, and a wide corridor entrance, and above a hall the whole length of front. The tower which springs from the junction of the two blocks on the south side is picturesque, and with nice outline and details. Red brick and stone are the materials. The accommodation set down is 1,100 on ground floor, and 442 on gallery.

"Forward" is a well-thought-out design, perhaps too Town Hall like in its front elevation, but nevertheless dignified in a kind of modern Romanesque of brick and terra-cotta; the front has corner square turrets, a high roof and flèche in the centre, the windows are round headed, and there is a bold, deeply recessed archway in centre, which gives access to the chapel. The latter is an oblong, 100ft. by 56ft., placed north and south, the platform recess in the centre on west side, and the seats arranged amphitheatre wise with radial passages. This arrangement brings the front of the gallery rather near the preacher, and we think is better adapted for a medical lecture theatre. The other rooms, the lobby entrance to chapel, are convenient. The hall has the same arrangement of side platform. Much less satisfactory is the interior, as shown by the sepia perspective; the details are "thin," there is a flat panelled ceiling and clerestory to chapel, and the nearness of platform spoils the effect.

We can only briefly notice the other designs. "Lux" is clever; the interior perspective is nicely drawn, but the exterior has a rather warehouse type, being entirely of red brickwork with small openings; the irregular plan of chapel is more ingenious than effective. "Arcanus" shows a better arranged plan of chapel, 93ft. by 63ft., the pulpit platform being on the long axis of rectangle, some distance in front of the end wall, with seats planned between radial passages. The Italian exterior is of the Municipal character, with corner tower. The ceiling is flat and coved.

"Red Star" is essentially chapel-like, with the usual amphitheatre-like plan, 81ft. by 78ft., with platform at west end, the details somewhat bizarre. It is singular

that the author should have exceeded the limits of frontage and taken up the whole width of ground for his building, and still more remarkable that the assessor has thought fit to sanction this infringement, as he has done in the case of "Winged Heart." "Hearing and Seeing" has the rectangular plan of chapel with recess for platform, and the author has only partially, we think, met the requirements. "Wisdom, Strength, and Beauty" is in Italian, with domical chapel, and excessive in its features. "Spero" also is costly and pretentious; the domes and towers are numerous, the chapel is square, surmounted by a large dome with semi-circular seating; the square hall has corner staircases, carried up by crowned cupolas; and the front towards Tottenham Court-road is of four stories.

We cannot think Professor Roger Smith's award justifies his own convictions, nor the claims of those whose designs he admits have merits of a higher order. The principles which the assessor in his report has well laid down, and which we had presumed had influenced his decision, have been set on one side in favour of a design which, whatever may be its merits—and we do not underrate them—cannot compete with at least two of those which he acknowledges are "remarkable for artistic merit." Many correspondents express their surprise at a decision which so completely contradicts their idea of principle of selection, one design having been selected from four of the economical class, and the second from one of the three artistic designs. The instructions stated that the award of the premiums would be left in the assessor's hands, but they made no promise as to which design they would accept for building. Perhaps even now it is not too late to hope for a revision.

SPECIFIED MATERIALS AND WORKMANSHIP.

ONE of the prosaic duties of the architect is that of knowing the markets, current quotations, and inventions connected with building. Fine art in the abstract is a pleasant theme for those who can look at architecture from the outside, to discuss at congresses and social gatherings, theorise about at professional societies, and talk over at home; but it does not constitute practical architecture. A man who can advise on building matters must be an expert in materials, manufactures, and appliances, for it is at least nowadays more than half good architecture to know what materials should be used, and how they should be introduced. Quite a symposium of thought and skill in art might be made out of goods and materials supplied in contracts which included so many of the industries of the the present day. Nearly all of the applications of science to art have taken one form or another of concrete embodiment, and these are now enlisted into the service of building and construction. The difficulty is to know which is the best material or the best appliance for a particular use, for until the professional architect or engineer decides in his own mind as to the proper conditions, there is the mischief of specifying materials and goods at random, because they happen to be in the market and in general request. The fashion for employing a certain material, or the general run upon a certain article, appears to dictate its use without a knowledge of its real advantages. Thus, to take clay wares, some time ago there was a great demand for pressed bricks and for perforated bricks; the former were suitable for wet situations, but their smooth and half-glassy surface was disappointing where brick effect was desired; the perforated bricks were made from heavy clays, and they were pierced with a number of small holes throughout their thickness to reduce the weight; but it was soon found the perforations made them useless for cutting, and a considerable waste was caused. Then there is a difficulty in cutting gault bricks, although they are exceedingly hard and durable, and suitable for some kinds of building. In specifying terracotta, it has been the custom to place too much reliance on the market, and to assume that anything can be turned out under existing conditions of manufacture equal to stone. Disappointment has been the result. The shrinkage, the expansion of the cement concrete filling in, the twisting and warping of the material after baking are accidents which the contractor cannot be made answerable for, especially when the designs have been made upon expectations founded on stone work. The architect's design is transferred to the modeller; but the actual casting is spoilt by unskilled hands in the after processes and firing. All the skill is expended in making and fitting the moulds, which is but the preliminary step, and may be spoiled by unequal shrinkage, trimming, and after-manipulation. So that in intricate designs the architect is disappointed at the result—the warped lines, the rough arrises. Recent improvements have removed these difficulties and risks, so that in specifying large quantities of this material the architect would do well to require that manufacture which gives him the highest result.

So in the manufacture and supply of cast iron. It is too much the custom to select patterns and castings that have had a run without inquiry whether they really fulfil the requirements. The temptation of the contractor is to use what he finds ready to his hands; he hints that it will delay the work if he works to a new design, and that the cost will be more. The architect in practice is well aware of these representations, but is unfortunately often inclined to give way to them, forgetful that by acquiescing in the substitution of inferior goods he is compromising his taste and the real value of his services. Extra trouble and cost, or want of appreciation on the part of a client, are no excuses for agreeing to something that is discordant with the design or inappropriate. Suppose it is a number of cast-iron pillars and spandrels to support, say, a gallery round a hall. The contractor may persuade the architect to select a certain stock pattern. The pillars are fixed, but their proportions or design of capital and bracket are out of key with the interior, and nothing can be done to alter it; they remain a sad reproach upon the architect's taste. Or let us imagine a series of pendent or lamp brackets in a church that have been selected to save a few pounds. They for ever mar the church by their vulgarity or discordance; far better would it have been to have agreed to a much simpler and less obtrusive pattern. The extra cost of a new pattern would make a comparatively small addition to the cost of each column, while the harmony of the design would not have been destroyed. The multiplication of the same pattern is often made an excuse for substituting a less expensive article, generally because the contractor gets a discount from the manufacturer, and nets a profit upon the order. Sometimes the desire to quote a price under a normal sum may induce the contractor to supply a stock pattern. Hence the absolute importance of making detailed drawings and specifications for ironwork of an architectural character. There are now great temptations to introduce something inferior. In these days, when manufactures have been substituted for handicrafts, it is more necessary to call the attention of the architect to the importance of detail drawings for all iron and metal work, wood work, modelling, and the like. The machine-made goods are the products of repetition, and repetition is therefore the prevailing sin of the contractor. The Arts and Crafts Exhibition is a protest against the machine-multiplied design, and an attempt to revive the English traditions of handicrafts, and those who feel any desire to improve workmanship should pay the exhibition now open a visit. We shall be told that the old traditional handicraft cannot now take the place of manufacture; perhaps not in its true traditional form, but it may awaken designers and producers to the danger of mechanical repetition, and set them to work on more rational lines, to learn the true principles and methods of applied design. We are now concerned with the ordinary "goods" and "materials" used in building, such things as bricks, floors, iron-work, joiners' fittings, sanitary fittings. The ordinary specification simply provides for these things, it does not define what class of manufacture they are to be, except, perhaps, that they are to be the "best" or "approved," terms which may mean nothing unless the architect takes the trouble to obtain the right thing, or himself designs, or selects from the manufacturer the particular article. Means of making known to the trades connected with building the qualities and merits of artistic workmanship and design, of drawing attention to the right models, are not what they ought to be, or might be made, if we except exhibitions of a select character of goods designed and executed by artists. Not knowing the ideas of architects, manufacturers are contented to work in the old groove and to reproduce for the sake of profit. Designer, craftsman, and contractor must be brought more closely together before a standard of quality or of merit can be recognised; they must be placed on the same level, discard the mere "fashionable" or "archæological," and endeavour to realise that their interests, though not identical, are certainly not contradictory.

The one serious obstacle to reconciliation between the designer and contractor is the requirement of price. How, for example, is quality of skill to be guaranteed in such an ordinary competition as the construction of so many yards of "glazed socketed pipe sewers, or of brick manholes, and settling tanks," or for the laying of "so many yards of sanitary pipes," to quote an advertisement, if the lowest tender is to be accepted unconditionally. The plans, specifications, and forms of tender, if rigidly adhered to, may mean a considerable out-of-pocket transaction, or if they are not complied with the competition becomes a mere farce. The only desirable way is to make a private estimate, and to accept the tender which comes fairly within a moderate percentage of it; but it is manifesty more satisfactory to invite a schedule for laying per yard in such a case, as it would be easier to see whether a fair or remunerative sum has been put down. When the price is for a large quantity of work in the lump, it is less possible to insure the specification being carried out. In architectural tendering there is even more opportunity of breaking away from the conditions than in work of a plain mechanical sort. When the architect can introduce a form or mode of tendering that will give the contractor some interest in employing skilled hands and artistic products, an improvement will be made.

ARTS AND CRAFTS EXHIBITION.

A LARGE and, on the whole, successful exhibition of arts and crafts is opened at the New Gallery, Regent-street. Commencing our examination in the south gallery, we notice a large cartoon and photographs for sgraffito in Clane Church, county Kildare, designed and executed by Heywood Sumner, representing "The Baptism," very effective in line and characteristic of the material. Next to it John Scarratt Rigby has a design

for block-printed cotton velvet in three or four colours. The ground is green and the flowers are well distributed over it; the stems conventionally arranged to form a repeating pattern. The fine series of cartoons by Morris and Co. which occupy a large space on the walls show a design (perhaps enlarged) by E. Burne Jones, A.R.A., for a window at Jesus College, Cambridge, in which the artist represents the Hierarchy. It is needless to say the conception of the nine figures comprising angels, archangels, cherubim, seraphim, thrones, dominions, &c., is full of that spiritual and symbolical meaning which Mr. Burne Jones can impart. The figures are designed with exceeding grace, the countenances are of the ideal angelic type we meet with in this artist's work, the draperies vigorously drawn in black chalk. The central figure of a seraph with censer, for example, is a noble study of a decorative figure subject. The window has been executed by Messrs. Morris and Co., who also show a very beautiful design in chalk, by the same artist, for a window at Gilsborough, Northampton, "Lazarus and Mary"; another window illustrates "Rachael and Jacob." The cartoon for Lanercost Abbey, "The Annunciation to the Shepherds," also executed by this firm, is another of E. Burne Jones's designs. A bold "filling" in two colours, red and yellow, is shown by George C. Haité, an exceedingly elegant adaptation for wall surface. Another pleasing wall paper cartoon in tempera is shown by Walter Crane in two cartoons. The subject "Corona Vitæ" is a clever idea worked out with considerable skill and fancy. The design is emblematic of a "full and ample life," the winged lions and other devices cleverly introduced. It is shown tdeated as an embossed leather paper, and also in the flat. An ornamented overlap leaf design by Lewis F. Day, printed in transparent lacquers on a gold ground with other treatments of the same, both in rich flocks and distemper colours. Various examples of flat treatments of chintz and other papers, printed in ordinary distemper colours and in transparent colours, from designs by Miss Mary Gemmell, Messrs. A. F. Brophy, B. and F. Gast, C. F. A. Voysey, Edmund Sedding, and J. Rigby. In another gallery Jeffrey and Co. show an embossed, lacquered, and gilt leather paper with the design (377) and a frieze on distemper, also a wall-paper painted in distemper colours and gilt on which the design is introduced.

Another large contributor in this branch of art is Selwyn Image, whose excellent little essay in the catalogue "On Designing Embroidery" may be read with profit. We notice particularly a design in charcoal and chalk for a painted glass window (24) for the Church of St. Michael and All Angels, Watford, Herts, and another for a window executed in grisaille (25). A large cartoon in charcoal, for a fresco in the Manchester Town-hall, is hung at the end of this gallery, and represents "The Baptism of Eadwine," by Ford Madox Brown, a very appropriate subject, and ably handled by the artist, who depicts the Northumbrian King being baptised. The composition is well arranged, the king is seen standing in a font, surrounded by the bishop and wise men, the rite of baptism being administered by the method known as affusion. The Kyrle Society send a very appropriate design for decoration of Working Men's Club at Vauxhall, the frieze of which is bold, and in nice colour, with a dado band. G. Woolliscroft Rhead's designs for majolica roundels, being emblems of the Evangelists for St. George's Church, Newcastle-on-Tyne (19); James Powell and Son's mosaic panel, "The Blessed Virgin Mary," designed by Miss Harrison; Lewis F. Day's faïence vase designs (55) and design by T. M. Rooke for a ceiling, "The Seven Stars and Signs of the Zodiac," may be named. John D. Sedding's plaster model of centre of an altar, modelled by Conrad Dressler (75) is a nice treatment. In the west gallery we have various embroideries and fabrics. Thomas Wardle's collection of printed silks, satins, plush, woollen and linen cloths in permanent colours, some of them designed, others reproduced from ancient fabrics, are noticeable. Very rich designs and colours we notice in some cotton velvets and printed silks (108). A design for an Irish national banner, embroidered in silks on hand-worked ground, designed by Walter Crane and executed by Una Taylor, is effective. The artist has cleverly arranged the Celtic cross and sun's rays which form the principal features; the four quarters of the banner contain shields of the four provinces. Mary Augusta Smith shows a very cleverly-worked and chaste wall-hanging of the Four Elements, designed by Heywood Sumner, worked in yellow and gold thread on cream-coloured cloth or serge. The Royal School of Needlework sends several good examples—one, a quilt worked on linen in crewels, designed by W. Morris, executed by B. Pike (132). The fireplace by Wilson and Pomeroy is rather heavy; but the modelled frieze is telling and effective. A handsome red stole (187), embroidered on red silk damask, designed by Aymer Vallance, and executed by K. Delano-Osborne; and an embroidered silk cushion, executed by Isabel Rogers, from an old Chinese design (186), and a case of embroidery sent by Morris and Co., together with the altar-cloth of needlework worked in silk and gold (235) designed by Selwyn Image, are creditable specimens of embroideries, designed on correct principles, in which the decoration of the material is not lost sight of in the mere device worked. The works exhibited by many lady artists, such as Miss May Morris's curtain, "The Fruit Tree," embroidered on blue linen, show a right appreciation of the art of arranging lines and masses on surfaces according to the purpose intended. Even much of what we see in modern embroidery is too delicate and minute, and the work and effect are therefore lost. In this gallery is a chimneypiece in giallo and verd anticed marbles executed by Farmer and Brindley, and designed by W. R. Lethaby.

The North Gallery contains one or two nice panels in gesso, bronzed for friezes, designed by Walter Crane, and executed and modelled by himself, Harold Weekes, and the late Osmund Weekes (283-287). The subjects are appropriate to libraries. The Anaglypta Co. show some very nice examples of their relief decoration. Gillow and Co., Howard and Sons, the Guild and School of Handicraft, Reginald T. Blomfield, Morris and Co., Collinson and Lock have many examples of well-designed and executed furniture. The walnut and boxwood marquetrie sideboard (340), designed by G. J. S. Lock, and the cabinet-work, by B. C. Jewell and Spurgeon; the rosewood and ivory tables, shaped as in (345), are exceedingly elegant specimens of craftsmanship. Jeffrey and Co. exhibit several beautiful and appropriate wall-papers, many of them designed by W. Crane and Lewis F. Day (376-395), and we notice particularly here a well-designed and carved litany desk, designed by Reginald T. Blomfield, and the woodwork and carving being by W. Aumonier, with brasswork panels. Messrs. Maw and Co. send a unique case of vases in lustre ware (416), designed by W. Crane. In the entrance-hall the altar of alabaster, lapis-lazuli, and repoussé metal, designed by J. D. Sedding and executed by T. Stirling Lee and A. G. Walker (422) makes an imposing feature. The painted wood credence table for Memorial Church, Greenwich, designed by A. H. Skipworth and executed by R. Godbold (425), altar cross in hammered gilding metal, set with rock crystal, designed by Mrs. H. Rawnsley, of the Keswick School of Industrial Arts (426); Strode and Co.'s excellent newel and panel in wrought iron, designed by W. Amor Fenn; the exhibits of the Coalbrookdale Co. (453), and the beautiful and very elegant opal glass set in hammered iron in the form of pendants, brackets, table glass by J. Powell and Sons (502); a good specimen of heraldic work in marble mosaic by Mainzer and Kempthorne (479) are all we have space to notice. A few drawings of ecclesiastical work, and a variety of other designs and specimens of craftsmanship are seen in the balcony.

FREE PUBLIC LIBRARIES.—V.

THE meeting of the Library Association of the United Kingdom, at Reading, the week before last, which brought together from all parts of the country a large number of librarians and officials of free public libraries, comes opportunely in discussing the details of libraries. The useful remarks on ventilation, heating, and lighting of libraries by Mr. W. H. Greenhough, the librarian of the Free Public Library, Reading, we shall give when we refer to this part of our subject.

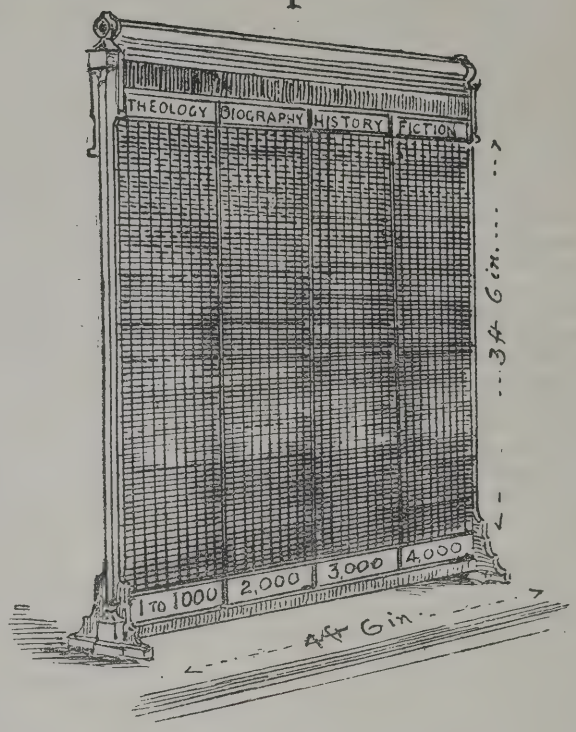
Dr. Thompson, the president, referred to some very instructive facts in connection with the spread of the library movement. The adoption of the Act at first was slow, yet about 200 towns in the kingdom had adopted the Act in the course of forty years. Statistics, he went on to say, proved "that the increase had been one of arithmetical progression, and for every ten libraries added this year, there would be twenty in the next, and so on until the demand was satisfied." The geographical aspect of the movement is suggestive. Dr. Thompson showed that the great centre of the movement lay in the central counties, and if we imagined a band drawn across the country extending from southern Lancashire and Yorkshire on the north to Warwickshire and Northamptonshire on the south, the free library towns were within this zone. Within these limits are the great manufacturing towns. The Metropolis is another great and independent centre. Every week we record the opening of new libraries. On Tuesday last Mr. D. R. Plunket, M.P., opened a new public library at Battersea, and Sir John Lubbock, M.P., performed a similar ceremony at Rotherhithe, while the Lord Mayor opens the new Clerkenwell Free Library on Saturday in next week. In referring to literature, Dr. Thompson observed that the vigilance of the librarian would have to be exercised in the selection of prose fiction, which is exceedingly prolific. Happily the three-volume novel is not so commonly read as it used to be; but the question of storage-room for books of this description is one of the questions with which the librarian is called upon to deal. Compilations of treatises on history, theology, philosophy, and science are growing year by year; book-makers are more numerous than authors who have something to say or teach; therefore the discrimination necessary in selecting such books for a reference library requires no small amount of study and labour.

Every librarian has his own ideas of selection and classification. The principal consideration is to secure for each library a fairly complete and representative collection of the literature of the day, not to give an undue prominence to any one branch. The editions to select are rather those that are clearly printed and not too large, and the single-volume editions of Tennyson, Thackeray, George Eliot, Carlyle, and other writers are more suitable for lending than the several-volume and more costly editions. In works of fiction especially we strongly recommend economy on this point. The three-volume novel is an incumbrance and wasteful of space. One volume

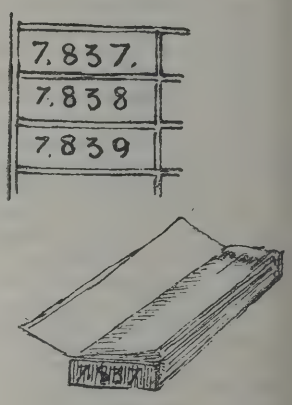
novels and biographies, if of any standard value, can be obtained, but if not, they are dear at any price. This rule need not be extended to more important branches of literature. Such works as Darwin, Spencer, Tyndall, and other writers on science, and those of Ruskin, Arnold, Newman, Martineau on art and theology, as excellent in literary style, must be obtained if a library is to represent the higher lights of literature, in lieu of works not very popular, or not obtainable in one-volume editions. Generally, it may be well to say that the great authors in history, philosophy, science, theology, and the fine arts should be selected from good editions, and the higher kind of poetry and prose fiction should be selected with not too parsimonious a hand, as these branches of literature should form the nucleus of every good library.

To facilitate order and classification various means have been employed, and to some of these we allude. We have already spoken briefly of the counter and indicator, and now refer in more detail to the Cotgreave indicator, which has been adopted by a considerable number of free libraries after an examination of other plans of registering. At Leeds, Nottingham, Stockport, and a score of other leading institutions we find this form of indicator in use. Mr. A. Cotgreave, the inventor, the present chief librarian of the Guille-Allè's Library, Guernsey, possessed experience of the requirements of librarians and borrowers, and after some thought has perfected an indicator which is simple in construction, easy and saving of time to the borrower, can be at once scanned by the librarian, who at a glance can see the time any book has been kept, who the borrower is, how many books he has had, and find other particulars that are necessary to be known by the custodian. One feature of the Cotgreave is that it occupies little space on the counter. As already described, it consists of an iron frame fitted with as many thousand zinc shelves as there are books to be recorded. Each shelf has a little metallic cased ledger numbered alike at both ends, but coloured blue at one end and red the other. When a borrower requires a book he seeks its number in the catalogue, and then looks at the indicator, where the numbers are arranged in regular order. The number found, the colour at once reveals the fact whether the book is in or out. Thus if the blue end of the little case is visible the book can be had, but if the red end is out, then it has been borrowed. To find the titles and authors of any of the numbers, a catalogue key numbered like the indicator is framed and placed by it. We give a sketch (Fig. 1) of the Cotgreave indicator for 4,000 volumes. Each indicator occupies about 5ft. in length of the counter, and they can be placed with intervals of about 3ft. along the counters if there is length enough, or they can be placed close together on each side of the opening for borrowers. As a rest for books is useful in front of the indicators, they should be set about 9in. or so from the outer edge of the counter. One of the decided merits of this indicator is that the borrowers themselves can be made to check the accuracy of the registration. In issuing books, no entries have to be made, the only thing required being to insert the borrower's ticket and draw back the number in the indicator. In discovering outstanding borrowers, the indicator has been found of great use. Fig. 2 represents, to a larger size, the metal shelves and the small metal-cased ledger which is inserted on each shelf, numbered at each end. Each book is ruled and headed for borrower's name, number, date of issue. By using a date slide, the numbers can be covered altogether when a book is out. Other uses for checking the issue of books, &c., may be made of the indicator; but for further details we refer our readers to the inventor and librarian of the Guille-Allès Library, Guernsey.

1

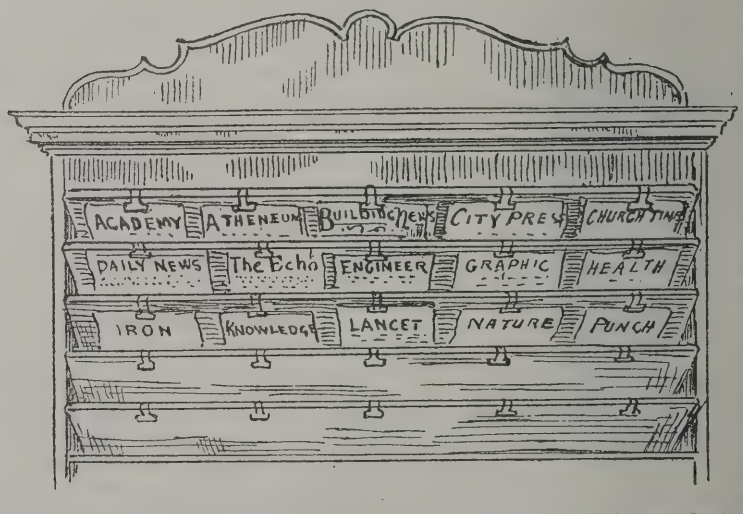


2

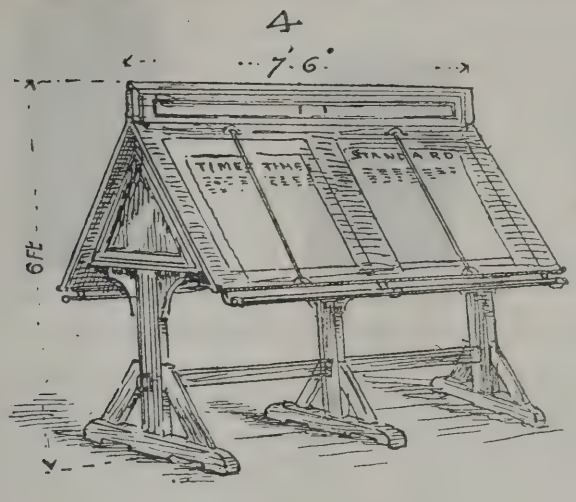


An improved newspaper and periodical rack has been introduced by Mr. Cotgreave, the inventor of the indicator already described, which rack is now largely in request. The number of serial publications issued weekly and monthly is now so formidable that librarians find a difficulty in finding room for them, and in keeping them clean and in order. These are usually placed on the tables, and become disarranged by readers, and it is often difficult to find the paper required, or to know whether it is in use. The Cotgreave rack occupies little space, and is about 6ft. square for 200 periodicals. It is a wooden frame, fitted on both sides with diagonal shelves, like louvre boards, with a clear space inside between the edges of shelves, so that any size of paper can be inserted slanting, and without folding, its own heading or title being left visible. By means of a spring clip the paper is held in its place, and can be removed at pleasure. The papers are arranged in alphabetical order, so that any reader can immediately find the one he wants and withdraw it from the rack without touching the clip, which acts automatically, and has only to be pulled back when reinserting the paper. If not properly fixed it falls through the rack, and immediately draws the attention of the reader. The papers by this means are kept clean and orderly, and the absence of any one can be at once noticed. (See sketch 3.) By a recent improvement the numbers of a journal for several weeks can be placed together in the rack, so that any back number can be removed without disturbing the others. This form of rack may stand on the floor, or be placed on a table or counter, or against a wall, whichever is most convenient.

3



We called attention in our last article to the newspaper stand, and showed how its length should be determined. The sketch we give, Fig. 4, represents the construction of the ordinary stand. The length being determined by the unit of a newspaper opened, and the number for which the stand is intended, it only remains to give it a convenient height for readers standing. From 5ft. 6in. to 6ft. is a good height, so that the eye may be on a level with the apex of the sloping desks, which may be inclined at a good angle for reading. Some of those we have seen have an angle of 60°, or the slopes and base form an equilateral triangle. The base of desk may be about 3ft. from the floor level; the space for each newspaper about 3ft. 9in. On the horizontal piece that runs along the top the names of the news-



papers may be printed. A brass bar, about ⅜in. diameter, hinged at the top and locked to a plate at the bottom, should be provided, to pass over the middle of the paper to secure it to the desk. Along the bottom of the desk on each side a thicker brass bar is fixed as a guard. Stained and varnished yellow pine is a suitable material for these stands. They may be placed to stand at right angles between the windows, one end close to the wall; or, if the width of the news-room is narrow, half-stands may be provided with only one slope, placed lengthwise against the wall, a plan that has been followed at the Norwood Library; but, of course, the shape and dimensions of the room will determine their position. A very good arrangement of desks and tables is that at the Reading Free Library, to which we shall refer in our next article.

THE ART CONGRESS IN BIRMINGHAM.

THE preliminary programme is now being issued of the third annual Congress of the National Association for the Advancement of Art and its Application to Industry, which is to be held in Birmingham, under the presidency of Mr. J. E. Hodgson, R.A., from November 4 to November 8. The meetings of the sections, presidential address, and other work of the Congress will be carried on in three different buildings—viz, the Mason Science College, the Midland Institute, and the Council House. The inaugural addresses of the presidents of sections will be delivered in the large lecture theatre of the Midland Institute at the opening of the morning meetings at 11 a.m. The president's inaugural address will be delivered in the same building on the Tuesday evening.

The order of proceedings is as follows:—

Tuesday, November 4.—10 a.m., meeting of council, No. 1 Committee Room, Council House; 11 a.m., Mr. P. H. Rathbone, presidential address in Section E, Mr. J. Thackray Bunce on "Encouragement of Art by Municipalities," Mr. T. Stirling Lee on "Municipalities in their Relation to Art Schools"; 2 p.m. (combined meeting of Sections B and C), Mr. Roscoe Mullins on "Sculpture as Internal Decoration," Mr. Ralph Nevill on "The Importance of Field Study for Architectural Decoration;" 2 p.m. (combined meeting of Sections A and D), Mr. Selwyn Image on "Colour in Relation to Internal Decoration," Mr. W. E. F. Britten (not fixed); 8 p.m., President's inaugural address, Midland Institute.

Wednesday, November 5.—11 a.m., Mr. T. G. Jackson, presidential address in Section C, followed by an architectural paper; 2 p.m. (Section A), papers by Mr. John Brett, A.R.A., on "Education in Art," Mr. Stanhope Forbes (not fixed), and Mr. W. J. Wainwright, A.R.W.S., on "Some Remarks on the English School of Water-colour Painting"; 2 p.m. (combined meeting of Sections B, C, D, E), Mr. Heywood Summer on "Advertisements," Mr. Bidlake on "Architectural Drawing," and Mr. Ablett on "The Drawing Society"; 8 p.m., reception of the Mayor (Alderman Clayton) at the Council House.

Thursday, November 6.—11 a.m., Mr. A. H. Mackmurdo, presidential address in Section D, and Mr. Alfred Gilbert, A.R.A., on "Metal Work"; 2 p.m., Mr. Henry Holiday on "The Figure in Design," Mr. J. W. Tonks on "Art as Applied to Jewelry and Personal Ornament"; 2 p.m. (combined meeting of Sections A, B, C, E), Mr. James Orrock, R.I., on "A Gallery of British Art"; 4 p.m., reception by Birmingham Royal Society of Artists, Newstreet.

Friday, November 7.—11 a.m., Mr. G. Simonds' presidential address in Section B, Mr. E. Onslow Ford, A.R.A., on "The Modern Education of Sculptors," M. B. Creswick (modelling master Birmingham Municipal School of Art) on "The Relation of Sculpture to Architecture"; 2 p.m. (Section E), Mr. William Kenrick, M.P., on "Technical Education as Applied to Art Industry," Mr. Ashbee "How can we foster Art at our Polytechnics?"; 2 p.m. (combined meeting of Sections A, B, C, D), Mr. Aston Webb on "The Education of Architects," Mr. F. G. Jackson (master of design Birmingham Municipal School of Art) on "Art Education in relation to Industry"; 8 p.m. reception by local committee at Edgbaston Assembly Rooms.

Saturday, November 8.—11 a.m., Mr. W. B. Richmond, A.R.A., president of Section A, followed by the general meeting. There will be three evening lectures for working men, at 8 p.m., on Wednesday, Thursday, and Friday evenings, in the large lecture theatre of the Midland Institute. They will be by Mr. Starkie Gardner on "Metal Work," Mr. J. E. Hodgson, R.A., on "Art Books, and How to Read Them," and on "Glass" (lecturer not yet fixed).

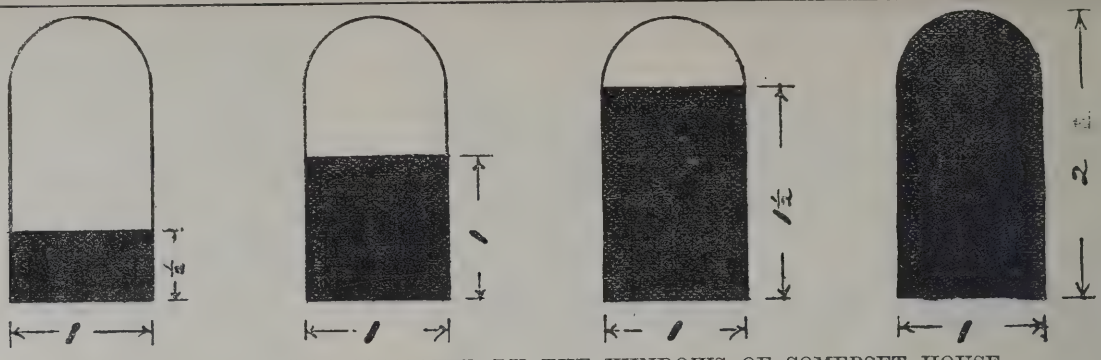
ARCHITECTURE: THE PLEASURE DERIVED FROM ITS STUDY.

THE inaugural address to the Class of Architecture and Construction at King's College, London, was delivered on Friday evening by Professor Banister Fletcher, F.R.I.B.A., J.P., D.L., who took as his subject the pleasure to be derived from the Study of architecture. In illustration of his definition of the term "Architecture" as a useful as well as a fine art, an enlarged elevation of the river front of Greenwich Hospital was exhibited side by side with one of the same front deprived of all superfluous features. In the latter case the plain walling, with the window openings and the parapet constituted good building, but not architecture. A simpler contrast between a bare and well-clothed French structure served to emphasise the point. Reversing the method of illustration the lecturer continued:—

Let us take a plain building with a straight front, with plain window openings and parapet, or eaves-gutter, and the cheapest form of substantial roof, the queen or king post. Now how can we make this mere building into architecture? Well, let us break up the front thus:—Recess slightly the central portion, and instead of the roof being hipped at each end, let us place gables at each end, and roof them with high-pitched roofs, and at once we get away from mere building and have a commencement of architectural treatment. Let us continue the treatment with the central portion, and you will admit that the one gives you more pleasure than the other. The outlay of thus turning mere building into architecture need not be expensive. It may be necessary in this commercial age that it should be so; certainly in the examples just given it may be done without much expense, and without any that is not remunerative. Some think that architecture means elaborate decorations, carving, and ornament, and even that well-known author, Mr. Fergusson, in his analysis of architecture, appears to lay too much stress on ornamentation when he says, "Architecture is nothing more or less than the art of ornamental and ornamented construction." It recalls to my mind a building, the ground floor of which was Grecian, the first floor Roman, the second floor Italian, and the roof and turret Gothic—all built without the slightest regard one for the other. It was certainly ornamented construction; but one does not wish to see another example built. Now, bear in mind that mere ornamental building cannot satisfy the taste. There must be proportion, without which no building can please, and this is the next division of my subject. All-important in architecture is proportion. Let me give you an illustration from Somerset House (see next page). First note the doorway, the height only half the width; how at once (although the height may be sufficient for all practical purposes) the proportion, I trust, strikes you as decidedly bad. Next, let me remove a further portion of our illustration, and you will see we get the square opening—the width and the height are the same—an improvement on the first, and yet I venture to hope you will still say bad proportion. Next, let me remove another piece of my model, and we get what will appeal to your eyes as fairly proportioned—the height being one-third in excess of the width. Now add a semi-circular arch (which I do by removing another piece of the model), and I think you will agree the proportion of this doorway is perfect. As I have mentioned, this example of proportion is from Somerset House, which was built from the design of that able architect Sir William Chambers. Before leaving this part of the subject, I should like to call your attention to a method of dealing with openings where you cannot increase the height, as we have just done in my model. We have a plain, ordinary country cottage, with (as usual) low ceilinged rooms. The small, almost square, windows cannot be heightened for the reason mentioned—viz., the low pitch of the rooms. The client says he cannot afford to rebuild, and yet wants some slight architectural character given, so as to redeem the cottage from looking like a labourer's cottage. Well, instead of heightening, make the windows wider, and the comparison will show what a difference is made. It gives some character at once. Let me summarise what we have then as the result with regard to proportion. 1. A building without proportion is utterly, hopelessly bad. 2. A building, no matter how simple, if in proportion, is good and pleasing. 3. A building in good proportion and with ornamented construction is to be desired, and will give much pleasure. 4. No amount of ornament or even ornamented construction is of any avail in producing a pleasing effect without proportion. Proportion, then, is the very *life blood* of architecture. To test whether designs would look well in execution, it has been suggested to wash the perspective all over with a dark tint of Indian ink, so that only the outline would be left (like, in fact, it would be seen in a London November fog), the opinion being that if the design then looked well, it was certain to be a success. This treatment would show that the many excellent persons, as the late Mr. Barry said, who seem to consider that any structure may be made ornamental by plastering it with so-called ornaments, as we cover a twelfthcake with sweetmeats, are thoroughly wrong. The key-note to the method of designing I ought to mention, for we must have some system, is—

"Consider what you undertake,
And analyse it well;
And ever work from whole to part—
Grand principle of master art
That makes that work to tell."

I trust I have made clear to you what architecture means. I next propose to point out the advantages you possess in its pursuit. Firstly, when you have acquired the true principles of the art, you have them always. Unlike science, the principles are eternal. The students of science must be ever learning the new developments, the new discoveries. That which they



PROPORTION, AS ILLUSTRATED BY THE WINDOWS OF SOMERSET HOUSE.

know as facts to-day may to-morrow become exploded theories. Nothing is fixed; nothing certain to remain as it is. Science then means change—that which is learnt to-day may have to be unlearnt to-morrow. On the contrary, art and architecture change not. Once learn the true principles of beauty, and they are learned for all time. In confirmation, I mention the marvellous fact that, with all our progress, we have never excelled—never equalled—the glorious works of Greece and Rome. So much for the advantage of once learnt. Secondly, you can always study your subject—at least, the external portion—without any payment, by day, and sometimes by night. Thirdly, when on vacation tours you have an additional source of delight. To those of you who are not architects the value of a knowledge, however slight, of the history of architecture cannot be overrated. Its use comes before us at every turn, whether in England or abroad. We cannot obtain half the enjoyment out of our vacation when travelling, unless we can inform ourselves of the different styles and at what date certain buildings which we visit were erected; unless, in fact, we can dissect our building, as the medical man his subject in the operating-room, and place, as nearly as possible, each part of our building to its correct date. The history of England, then, is, in a great measure, the history of English architecture written in stone, and our time-worn cathedrals and ancient churches offer attractions not to be disregarded by even the most hasty traveller; but, believe me, these attractions are increased a thousand-fold when one can trace each successive phase of the building of these cathedrals, when, by difference of outline, detail, and ornament, we can tell to an inch how much was done by this period, or where that period commenced, and in no building can these different epochs be better traced than in our own Canterbury Cathedral, or Westminster Abbey. The study, then, of the history of architecture may be looked at as a good commercial speculation, if from no higher point, and should form part of the education of every educated man, if he wishes to enjoy to the full the intellectual storehouses of the countries and buildings he visits. The time, we hope, will not be far distant when the history of architecture will be taught as a higher subject in the Board schools of London. The late E. M. Barry observed:—"Surrounding the cultivated minorities is a vast constituency—a nation of workers, of hewers of wood and drawers of water. To these is denied the enjoyment of pictures and statuary, excepting so far as these may be provided by special private liberality, or by the stinted efforts of an Exchequer ever grudging where art is concerned. A noble building, however, such as a grand cathedral, is in their midst. It cannot be hidden. It is a possession in which all have their share, and it is difficult to over-estimate the educational effect of architecture in such cases. Our art (architecture) is therefore a natural teacher, and even in these days may help to prepare the soil for the reception of that artistic seed, the importance of which I hope and believe is being gradually, if too slowly, recognised by those who regard the commercial prospects of our country with anxiety. I promised to explain the difficult term *beauty*. To show how stable are the canons of our art, I can find no better description than that given in the writings of Plotinus (born in Egypt A.D. 205). He says, combating the theory that proportion alone will insure beauty: 'If we are to fall in with this theory, we are committed to the assertion that only what is matter of composition and nothing that is simple is beautiful; but unless individual parts have beauty, the beauty of a composition will be derived from the proportion established among ugly elements. But simple things are beautiful. Colours by themselves have beauty, so has the simple light of the sun—what, then, of gold? What of starlight! What of sounds? And we know that in a song which is beautiful as a whole each note is beautiful singly." Further, concluding, he says: "Surely then there must be a beauty which is superadded to proportion, and the beauty of proportion itself must be dependent on something beyond." The conclusion to be drawn is: Proportion there must be, but the individual parts must have individual attention. As I believe we now all understand what architecture means (by the bye, a charming description of architecture was that given by Madame de Stael, who called it *frozen music*), I next have to explain the leading characteristics of the different styles. First, considering the origin of all architecture. The original dwellings of man are divided into three classes by Gwilt: the cave of the hunter and fisher, the tent of the shepherd, and the hut of the agriculturist. Having shown many illustrations of the three classes, Professor Fletcher continued:—Nearly all the cave excavations in Egypt are tombs. In India they are formed as dwellings, temples, and monasteries. In Asia Minor the caves are in many examples decorated with a façade of the Ionic or other types. Passing on to the Egyptian architecture. The Egyptians were pre-eminently a building race, and our knowledge of their entire history is due to the records they have left in and on stone. Their Pyramids were erected 3,000 to 3,500 years before Christ. It has been well said the monuments of Egypt give life and reality to their whole history. It is impossible for any educated man capable of judging of the value of evidence to wander among the pyramids and tombs of Memphis, the temples of Thebes, or the vast structure erected by the Ptolemies or Cæsars, and not to feel that he has before him a chapter of history more authentic than we possess of any nation at all approaching it in antiquity, and a picture of men and manners more vivid and more ample than remains to us of any other people who have passed away. Next in antiquity is the Assyrian, which dates from 1341 B.C. to 332 B.C. The form of building is of the heavy, massive type, relieved with glazed tiles and bricks. I give two examples—Nineveh, and fishing pavilion taken from the sculpture at Khorsabad. This exhibits all the parts of an Assyrian order with its entablature. The period is more than 1,000 years later than the Pyramids. The great charm in Grecian architecture is the refinement of line, as exemplified in the Parthenon, about 400 years B.C. It is considered that Grecian architecture in this building reached its highest perfection and beauty. In sculpture also we find a great advance. The conventional figure of the Egyptian and Assyrian period is gone, and we have work unrivalled in any country and in any age—sculpture of which the poet has said—

"And the dead marble leaped to life, a god."

Pause a moment to think that some 2,000 years ago perfection was attained—at least, the work is still the admiration of the world. And it adds to our wonder if we recollect that all these glorious works were accomplished in the short space of 150 years. The language of Mr. Fergusson may give excessive praise in speaking of the Parthenon, yet we may venture to agree with him. It is undoubtedly the most beautiful building in the world. It is true it has neither the dimensions nor the wondrous expression of power and eternity inherent in Egyptian temples, nor has it the variety or poetry of the Gothic cathedral; but for intellectual beauty, for perfection of proportion, for beauty of detail, and for exquisite perception of the highest and most recondite principles of art ever applied to architecture, it stands utterly and entirely alone and unrivalled—the glory of Greece, and a reproach to the rest of the world. We pass now to the pleasure to be derived from a very different character of art. Roman architecture was not matured like the Grecian in peace, but in war and conquest. Its architecture displayed greatness in the mass, grandeur in the conception, and an expression of power whilst it lost, but is deficient in the refinement and grace of the Grecian. The next style, the Romanesque; a modification of the Classical Roman forms, to adapt Classical forms to Christian purposes. In Italy and the South of France the Romanesque continued to be practised till the 6th or 7th century. In Constantinople and the eastern portion of Europe it developed into the Byzantine. In Western Europe, architecture, on the dissolution of the Roman Empire, seems lost for a time. And history next brings us to Romanesque architecture, invented and used by the Western barbarians who overthrew the Roman Empire. In England we know the Romanesque style by the name of Norman. Having briefly referred to the progress and development of the Gothic styles, elucidated by many illustrations, the lecturer added: I have long thought that a lack of idealism is the great defect of the present day. We work—and rightly too—for material improvement, betterment of social conditions, &c., but surely at the same time we ought to work for something else. Might not that something else be to endeavour to make the city we live in the most pleasing—aye, even the most beautiful in the world. You to whom I am speaking must in time become the governors of the policy that must help forward or mar this ideal. Try, then, to get rid of the present too often stated condition of building. Most people say, I want a certain quantity of space covered in and certain showy ornament, and it must all be done at such a sum. Do you imagine that that was the way they built the glorious buildings, the mere illustrations of which have, I hope, given us so much pleasure to-night. Again, in competition, too often the showy, meretricious designs carry off the prize, and are built. Why, then, is this? It is because the study of architecture is neglected, and it is certain that not until the public take to its study (and appreciate, as they are sure then to do, all its pleasures) will it insist that pleasure shall meet its eye in every new building, and not in buildings only, but in the planning of the streets, avenues, and open spaces. Then indeed shall we advance with rapid and successful strides. I trust that I have proved my subject, and, if so, the natural question arises, where you will study. To show you the desire there is that you should have increased opportunities here, I may mention the day courses are now so arranged that in the three years a complete study of the subject is given, and if properly followed should enable the students to pass the R.I.B.A. examinations. To the students at the evening classes, now first opened by the Council in conjunction with the Worshipful Company of Carpenters, is offered the advantage that after the lecture the demonstrator will take a constructional drawing class. Thus the explanations given by me as to trusses and roofs, and the other subjects connected with the lectures, will be impressed on the mind by this graphic work. In addition to the diagrams belonging to this college, I have my large collection, the labour of many years, and only last Saturday I went by invitation to see the collection of a friend, who

told me he intended to cease lecturing, and thought it a pity his large collection should remain unused, and I have arranged to purchase all his diagrams, photographs, and drawings, numbering some 336. Further, I have been purchasing casts of the best work of all time; some of these are now on their way by sea from Italy. The Council of King's College have allotted me a special room, and therein, and in the corridor adjoining, all these will be placed. The casts of Egyptian, Greek, Roman, Gothic, and Renaissance examples will be arranged on the walls, following their sequence of style, on the lines of the celebrated museum of comparative sculpture founded by the late Viollet-le Duc in the Trocadéro at Paris. There are over 120 specimens of architectural features which will be invaluable to the student attending the lectures, as he will have before him, if not the building itself, at least as much as we can give him of its contents. In addition, the Building Construction Museum contains materials which will be handed round during the lectures, and which will enable the student to acquire what is so necessary—a practical acquaintance with the look and touch of the materials themselves, so as to be able to distinguish between good and bad, and enable him to know what to condemn and what to pass in making the inspection of any building of which he may be the architect in after days Arrangements are now pending to have additional classes of design. There are classes of geology, applied mechanics, chemistry in relation to building materials, all under able professors, so that within these walls the student has now the opportunity of pursuing a complete and systematic course of architectural study. Let me take this opportunity of tendering my best thanks for the generous assistance I have received from the various manufacturers. In addition, owing to the liberality of the Worshipful Company of Carpenters, the students will have the advantage of a technical reference and lending library, and the use of Models, and they have built (through "Harbens Gift") a wood-carving school, working in conjunction with the Council of this college. All these advantges are open to day students, and also to the evening students. The Carpenters' Company also gives certificates, prizes, and medals. It is to me a great pleasure that in preparing my syllabus I have had the great advantage of the assistance of Mr. Arthur Cates, who also proposes to give prizes. I trust I have said sufficient to indicate to you how much pleasure you may derive from a study of architecture; with what added pleasure you will look at buildings when you have mastered the principle of the art; and, while deriving pleasure yourselves, you will also feel you are helping forward our country to take its proper—the foremost—position in the art world.]

SEWER VENTILATION.

At a meeting of the Society of Engineers, held at the Town Hall, Westminster, on Monday evening, a paper was read by Mr. W. Santo Crimp, M.Inst.C.E., F.G.S., on "Sewer Ventilation."

The author first pointed out that much had been written with regard to sewer ventilation, but that few experiments had been made, and as a result methods had been suggested that would almost certainly result in failure. It had, for instance, been constantly assumed that the movements of sewer-air were almost entirely due to temperature, an assumption which the author found did not subsist upon a satisfactory basis. He then referred to the experiments of Miller, Beetz, Miquel, Carnelly, and Holdane, which were made more especially with a view to ascertaining the number of micro-organisms present in sewer-air, relatively to those in the atmosphere. In the result it was found that sewer-air contained fewer; but the author pointed out that their nature might probably differ widely. With regard to the excess of carbonic acid generally found in sewers, the author suggested that it was probably largely due to the mingling of the ground-air with the sewer-air in cases where sewers were not air-tight. Referring to other gases found in sewers, he pointed out that these gases were in themselves incapable of producing fevers of the zymotic type, and argued that such fevers, when caused by sewer-air, were due to the germs of disease present in the sewer-air, and suggested that it was undesirable to set up rapid air currents in sewers, in the absence of which these germs would fall back into the sewage from which they arose. Dividing sewers into two classes—namely, those into which men could not enter, and the larger ones in which they were frequently employed, he suggested that the smaller ones should simply be provided with vents, carried high over head, and sufficient in number to prevent the house traps being forced; although a properly drained house should be proof against the most severe test. The large sewers, of course, had to be very fully ventilated—at any rate whilst men were employed in them. The author then proceeded to a consideration of the forces causing movements of sewer-air, and presented an epitome of the experiments made by him at Wimbledon during the year 1888. The experiments were carried on continuously throughout the year, and were made on sewers of all sizes up to 4ft. by 2ft. 8in. One pipe sewer, constructed in a hilly road, was continuously experimented upon, whilst tests were constantly made on others, including also surface-water sewers when these were free from water. In the result, the author found that the only currents measurable by an anemometer were those produced by the wind, and that the direction of the sewer-air currents varied with that of the wind, being sometimes uphill and as frequently downhill. The amount of movement of the sewer-air was also in accordance with the velocity of wind. Having regard to the facts, he suggested that in the ventilation of sewers the fullest advantage should be taken of the wind as a motive power, and that it should be deflected into the sewers, or made to induce out-currents, as may be found desirable.

THE ARCHITECTURAL ASSOCIATION CONVERSAZIONE.

The most brilliant and successful of the series of annual *conversazioni* by which the Architectural Association has inaugurated the year's sessional work was that which came off on Friday evening at the Town Hall, Westminster. The A.A. entertainments committee, with Mr. Arthur W. Earle as chief director, induced about a score of the leading art manufacturers to unite in lending materials and labour sufficient to transform the large hall for the evening into a sumptuously furnished drawing-room, thickly carpeted, amply provided with sofas, rout seats, tables, cabinets, and even pictures, and with walls artistically draped with tapestries, silks, chintzes, and papers, with a profusion of flowers and other foliage, plants, chrysanthemums, while another firm, Messrs. Rashleigh, Phipps, and Dawson, with the assistance of the Westminster Electric Supply Corporation, provided an abundant and equally distributed lighting by incandescent lamps. Throughout the week an army of over 120 workmen had been employed in fitting up the hall under Mr. Earle's direction, and the result was a charming *coup d'œil*. Pains had also been taken by the committee to avoid the blunders in the refreshment and cloakroom arrangements that had marred the enjoyment of the evening in some former years, the result being that socially, as well as artistically, the conversazione was a success. Invitations had been more liberally dispensed than heretofore, and there was a numerous gathering of the younger members of the profession and lady friends. A feature of the evening's entertainment was the illustration of hypnotism, given in the council chamber with the aid of a well-coached "subject," by Dr. George André, described as a professor of l'Institute Psychologique de France.

A carpeted and covered corridor, in which were shown hangings by Messrs. F. B. Goodyear and Co., led from the entrance into the large hall, and directly facing this was a lofty pavilion, under which the president, Mr. Leonard Stokes, held a reception. This pavilion or baldacchino, which was surrounded by palms, ferns, and autumnal flowers, was well draped with hangings in folds and festoons, and contained, beside the presidential chair and table, a bookcase and well-furnished cabinet. The arrangement of this central feature had been entrusted to Messrs. Gregory and Co., of Regent-street, who also displayed, in the bay immediately behind the pavilion, some cabinets covered with inlaid grotesque flowing ornament of Late Renaissance character. Passing to the right, the first bay was arranged by Messrs. Felix and Wayman, of New Bond-street, with crimson and heavily-gilded furniture of the Louis Quatorze period. The stage, which was occupied for the evening by the band of the Coldstream Guards, had been furnished in excellent taste by Messrs. C. Hindley and Sons, of Oxford-street; and in the bay next it on the left Messrs. Graham and Biddle, also of Oxford-street, showed china in walnut and ebony cabinets. Messrs. Collinson and Lock, of Oxford-street, showed some well-finished cabinets and other furniture, and Messrs. Gillow and Son had a similar display. Near and over the refreshment stall Messrs. Jeffrey and Co., of Essex-road, Islington, exhibited a selection of new patterns in their well-known papers, including a bold frieze paper in Free Classic style, designed by Mr. Hampton W. Pratt, and representing the "Four Winds"; an effective ceiling by Mr. Lewis F. Day, printed in five colours; a large peony treatment of frieze and grapes, designed by Messrs. B. and F. Gast, the colouring in soft tones of blues and greys; a chrysanthemum frieze by Miss Mary Gemmell, and other examples by Mr. A. F. Brophy. Messrs. William Morris and Co. showed some new patterns in papers and hangings, in which their characteristic tertiary colours were predominant. In the gallery, Messrs. C. Hindley and Sons had hung the greater part of the walls with chintzes and carpets; Mr. Thomas Wardle, of Leek, exhibited a very large frame containing choice examples of brocades, silks, velvets, cretonnes, and challets; Messrs. Pitman and Son, Newgate-street, displayed a selection of wall-paper, carpets, and some decorative work; Messrs. D'Oyley and Co., Oxford-street, also showed hangings, and near the stage were arranged specimens of Fisher's muraline duro-textile embossed tapestry, and other patent wall hangings; Messrs. Rottmann, Strome, and Co. exhibited papers and other Japanese work; Messrs. William Woollams and Co., some of their hand-made leather and other wall-papers; Mr. Freeman his pyro-granite; and Messrs. T. Bontor and Co., Dockerell and Co., Fisher and Co., and Hayward and Son were also represented by examples of the arts and crafts connected with architecture.

In the suite of rooms on the first floor were hung the premiated work executed last session in the various classes, and the awards were made of the prizes in accordance with the following list:

A.A. Travelling Studentship.—Percy D. Smith; 2nd, Sydney Tugwell.
A.A. Medal.—William Pywell.
Essay Prize.—H. G. Gamble.
Architectural Union Company's Prize.—1st, W. Wonnacott; 2nd, not awarded.
A.A. Sketchbook Title-page.—Victor T. Jones.
Cates Prize.—F. M. Simpson.
Lectures on History of Architecture.—1st, A. T. Walmsley; 2nd and 3rd, S. W. Cranfield, J. W. Hall, and W. B. Hopkins (æq.); hon. mention, C. Waymouth, J. Murray, and C. J. Shaw.
Lectures on Construction.—1st, A. T. Walmsley; 2nd and 3rd, Victor T. Jones and G. H. M. Trew (æq.)
Elementary Class of Design.—Section I. 1st, C. Orlando Law; 2nd, H. C. Lander; hon. mention, F. G. Hicks. Section II. 1st, Kotaro-Sakurai; 2nd, H. C. Lander.
Elementary Class of Construction.—1st, H. C. Lander; 2nd, W. B. Hopkins.
Elementary Class of Ornament and Colour Decoration.—1st, C. Orlando Law; 2nd, H. G. Lidstone; hon. mention, F. Gould Wills and A. T. Griffith. Class Prize, F. R. Gould Wills.
Class of Design.—1st, E. E. Fetch; 2nd, Alfred Cox; 3rd, J. Hutchings.
Class of Ornament and Colour Decoration.—1st, F. G. Christmas. Time sketch, 1st, F. G. Christmas. Note.—J. L. de Beaupré was placed first, but was disqualified, owing to his having received this prize last year.
Class of Construction.—1st, H. J. Leaning; 2nd, J. W. Hall; 3rd, E. Penfold.
Advanced Class of Construction.—Not awarded.
Lectures on Quantity Surveying.—1st, J. Murray; 2nd, H. Ermrich; 3rd, not awarded.

In these rooms were also shown a number of water-colour drawings by Messrs. H. L. Florence, A. H. Hart, A. Hemmings, H. V. Lanchester, Francis Masey, Walter Millard, G. H. Fellowes-Prynne, Edgar R. Selby, R. Phené Spiers, Aston Webb, and R. Needham Wilson, and also the Excursion photographs taken by Mr. J. L. Robinson, A.R.H.A., in Oxfordshire last August.

The foundation stones of a new Congregational chapel were laid on Wednesday week at Howdon, near Willington Quay station. The building will be of local freestone, Perpendicular in style, and will be seated in pitch-pine with open benches. The internal dimensions are 60ft. by 36ft. Mr. W. Hope, of North Shields, is the architect, and Messrs. Smelt and Robson, of Heaton, Newcastle, are the contractors.

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ILLUSTRATIONS.

THE JUNIOR CONSTITUTIONAL CLUB. — CONTEMPORARY BRITISH BUILDERS AND CONTRACTORS.—A SHEET OF OLD CHURCHES IN GLOUCESTERSHIRE, ETC.—A MUSIC ROOM AND WINTER GARDEN. — LITTLE MORETON HALL, CHESHIRE.—CANOPIED CHIMNEYPIECES, BY W. WALKER AND SONS.

Our Illustrations.

JUNIOR CONSTITUTIONAL CLUB, PICCADILLY.

This important addition to the leading club-houses of London is now in course of erection, from the designs of Col. R. W. Edis, F.S.A., who was the architect also of the Constitutional Club in Northumberland-avenue, erected a few years since. The façade of the present building, which will overlook the Green Park, is to be faced entirely with pure white Norwegian marble, relieved by dark marble columns and Red Shap granite sparingly introduced. The front will be constructed entirely of Portland stone. The ashlaring, of marble, will be supplied from Mr. Anker's quarries at Ofoten fjord. Messrs. Bywaters are the general contractors. The plans which we print show the interior arrangements, one great feature of which is the unusual prominence given to the smoking and morning room on the ground floor. The staircase is all of marble, with arcades and detached columns. The reception room faces the entrance. The dining rooms are splendid apartments, with the service accommodation well situated in the centre of the building. The drawing given was shown at this year's Royal Academy.

CONTEMPORARY BRITISH BUILDERS.

(See description on p. 522.)

ST. NICHOLAS CHURCH, GLOUCESTER.

The church of St. Nicholas is Early Perpendicular of a very interesting type, and is one of the most elegant buildings in the city. Owing to its being crowded round with houses, the spire is not seen to the best advantage; yet it makes a charming group, if looked at from either up or down the street. The 18th-century restorers endeavoured to improve the light inside by adding dormer windows in the roof, which give a bad effect both inside and out. The spire at this time was giving way at the top, and part of it was taken down and a lead roof and stone parapet substituted, as seen in the sketch, an alteration, however, which does not at all detract from its beauty.—E. G. D.

GREAT WASHBOURNE CHURCH, WORCESTERSHIRE.

A good example of the saddle-back tower common in this district, obtained by carrying up the eastern gable of the nave and building a tower of timber and plaster on the chancel roof. There is a peculiar Perpendicular window at the west end.—E. G. D.

CHIPPING NORTON CHURCH, OXON.

An interesting church of various dates, with hexagonal vaulted porch. The windows in the upper and lower part are not level on either side, thus giving a somewhat irregular appearance.—E. G. D.

MUSIC ROOM AND WINTER GARDEN, HAMPTON, MIDDLESEX, FOR MR. C. J. STUTFIELD.

These buildings have lately been erected at Grove House, Hampton, from the designs and under the superintendence of Messrs. J. T. Wimperis and Arber, and are now in course of decoration. Advantage was taken of the levels of the ground to form a gallery leading from the drawing room with a flight of marble steps down to the music-room level. The plan of the room is a parallelogram with the centre formed into an octagon, the eight detached columns carrying a circular dome. The pendentives being corbelled over, these eight columnsare connected by arches with corresponding columns against the wall. The walls are lined with a dado of old Spanish tiles, and the upper part with modelled plastering. The floor is in marble, marking the octagon in the design, and the whole has been specially modelled and worked out from the best Moorish examples. The work has been carried out by Mr. Frederick Anstey, of Alpha-road, St. John's Wood. There are some fine examples of old Cairene work in the gallery-front and in the window-screens overlooking the garden. A splendid mosque lamp will hang in the centre of the dome.

LITTLE MORETON HALL, CHESHIRE.

These two photographic views are by Mr. Richard Keene, of Derby, the well-known artistic photographer, and they form part of a series of studies of this rich and famous old Cheshire mansion which he exhibited at the last exhibition of photographs held at the Crystal Palace. We described them at the time, and now give these examples in further illustration of the building from which they were taken. Almost every part of the fabric was included in Mr. Keene's set of details. The view of the main entrance into the courtyard from the bridge is one of the most pleasing and effective. The two specimens given to-day show first the chimney-piece in the room over the porch, and the second print illustrates the doorway to the Hall itself. A complete set of measured drawings of Little Moreton Hall, drawn by Mr. J. Strong, will be found in the last volume of the "Abbey Square Sketch-book," so ably conducted by Mr. John Douglas, of Chester. Other views of the house were given in the Building News at the following dates: June 25, 1880; July 25, 1881; May 27, 1883; May 11 and 25, June 8, and December 17, 1886.

CANOPIED CHIMNEY-PIECES.

The fireplace, being as it is the centre of attraction in our chilly climate for seven or eight months in the year, naturally commends itself to the attention of the interior decorators as being a suitable point upon which to direct their energies. Much of late years has been done to make the chimney-piece a feature in the room. Twenty years ago, uncouth and horribly cold-looking Sicilian marble jambs and mantels reigned supreme. Now, ingenuity has been taxed to its utmost to produce artistic effect in wood, from the simplest work in painted pine, to the finest rosewood elaborated with inlay, carved work, and bevelled mirrors. But chimney-pieces, like all mundane things, have their fashion. Sometimes tile-decoration is in vogue, then mirrors, multiplicity of shelves, or superabundance of cupboards, brackets and shelves for china, and other ornaments—all in turn have their ascendency. The chimney-pieces which we illustrate this week are from the show-rooms of Messrs. Wm. Walker and Sons, of Bunhill-row, and they show what seems to be the tendency of to-day—viz., the use of the canopy, more or less ornamental. For halls, billiard-rooms, and even dining-rooms, perhaps, this is an improvement on many of the flimsy over-mantels, with their overdone baluster-work. Our sheet shows some five designs, which speak for themselves.

As the stonework of the tower and spire at the Cemetery Chapels, Brighton, has for some time past been a matter of anxiety to the Brighton Burial Board, they ordered a scaffolding to be erected, and their chairman, Mr. Arthur Loader, architect, carefully examined the condition of the fabric from apex to base, and laid before the board the result, with recommendations for prudently rendering the fabric secure and partial reconstruction. This the board unanimously adopted, and forthwith ordered Mr. J. T. Chappell, builder, of London and Brighton, to execute the work.

COMPETITIONS.

Bensham, Gateshead.—A limited competition has just taken place for plans for the extension of the Lady Vernon Schools at Bensham, and the managers have selected the design submitted by Mr. Stephen Piper, M.S.A., Neville-chambers, 42, Westgate-road, Newcastle-on-Tyne. The principal features of the selected design are a left-hand light to all classrooms, provision for clearing each classroom without disturbing any other, a mezzanine floor for hats and cloaks, the head mistress's room with conveniences, and book-store being placed on first floor, and a covered playground obtained by utilising the fall in site. The new wing will provide for 400 scholars, raising the total accommodation to 1,100, and will be commenced very shortly.

The Tate Intermediate Schools for Wales.—The report of Mr. Ewan Christian, who was selected to make the award of premiums under Mr. Henry Tate's gift for the best designs for intermediate schools in Wales, has just been published. Four premiums of twenty guineas each were offered, and fourteen designs were sent in. Of these Mr. Christian has selected seven for detailed comment, from among which he has awarded the premiums to the designs sent in by the following architects:—Messrs. Phillips and Holdgate, Cardiff; Messrs. Baker and Hughes, London; Mr. T. E. Pryce, London; and Mr. Robert Grierson, of Bangor. Designs for both dual and single schools were sent in by all the architects named except Mr. Pryce, whose plan was that of a single school. Mr. W. Cadwaladr Davis, the secretary of the committee appointed to administer Mr. Tate's gift, has sent lithographic copies of these designs to all the members and clerks of the various joint committees in North and South Wales.

Willesden Cemetery Competition.—The Willesden Burial Board, at an adjourned meeting last week, after consultation with Mr. Charles H. Worley, the architect of the successful plan for laying out and building upon the new burial-ground, came to an agreement about the scheme, and directed Mr. Worley to proceed at once with the work of preparing the specifications and working drawings. The site of the chapels in the centre of the ground was considered, but in the end the members concurred in Mr. Worley's opinion that it would not be advisable to alter the site to any considerable extent, and no motion was made. Other points were considered, and eventually it was resolved that the site of the lodge should be changed from the approach road to the N.E. angle facing Cobbold-road, and that the mortuary be placed in the shrubbery towards the north-west end of the cemetery.

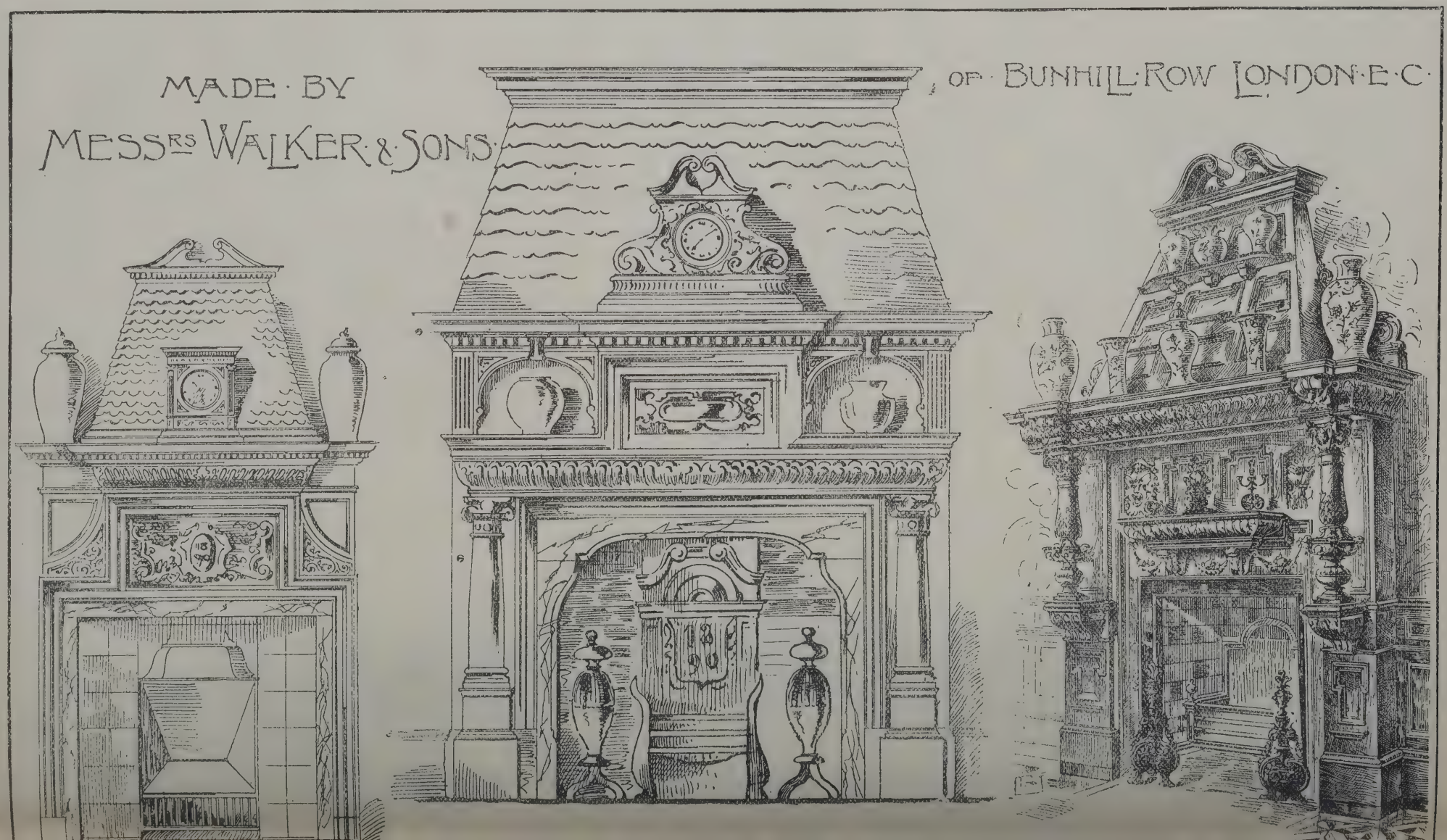
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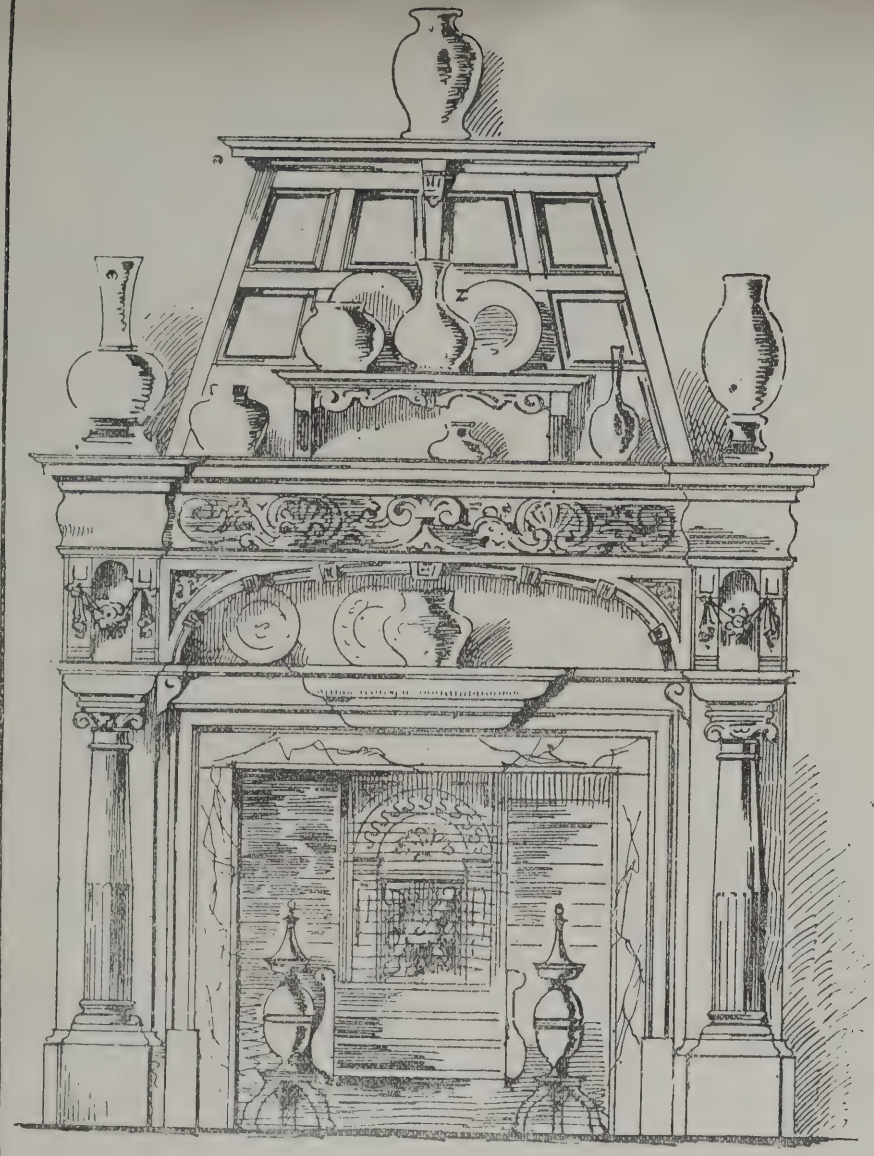
Ex-Bailie Gentle, one of the leading builders and quarrymasters in Dundee, and a prominent member of the town council of that city, died on Sunday after an illness of three months. He was the originator of the scheme for extending the Esplanade, and his last public work was the preparation of a report for the introduction of the cable system of tramways into Dundee. He had been fourteen years in the town council, and was in his forty-seventh year.

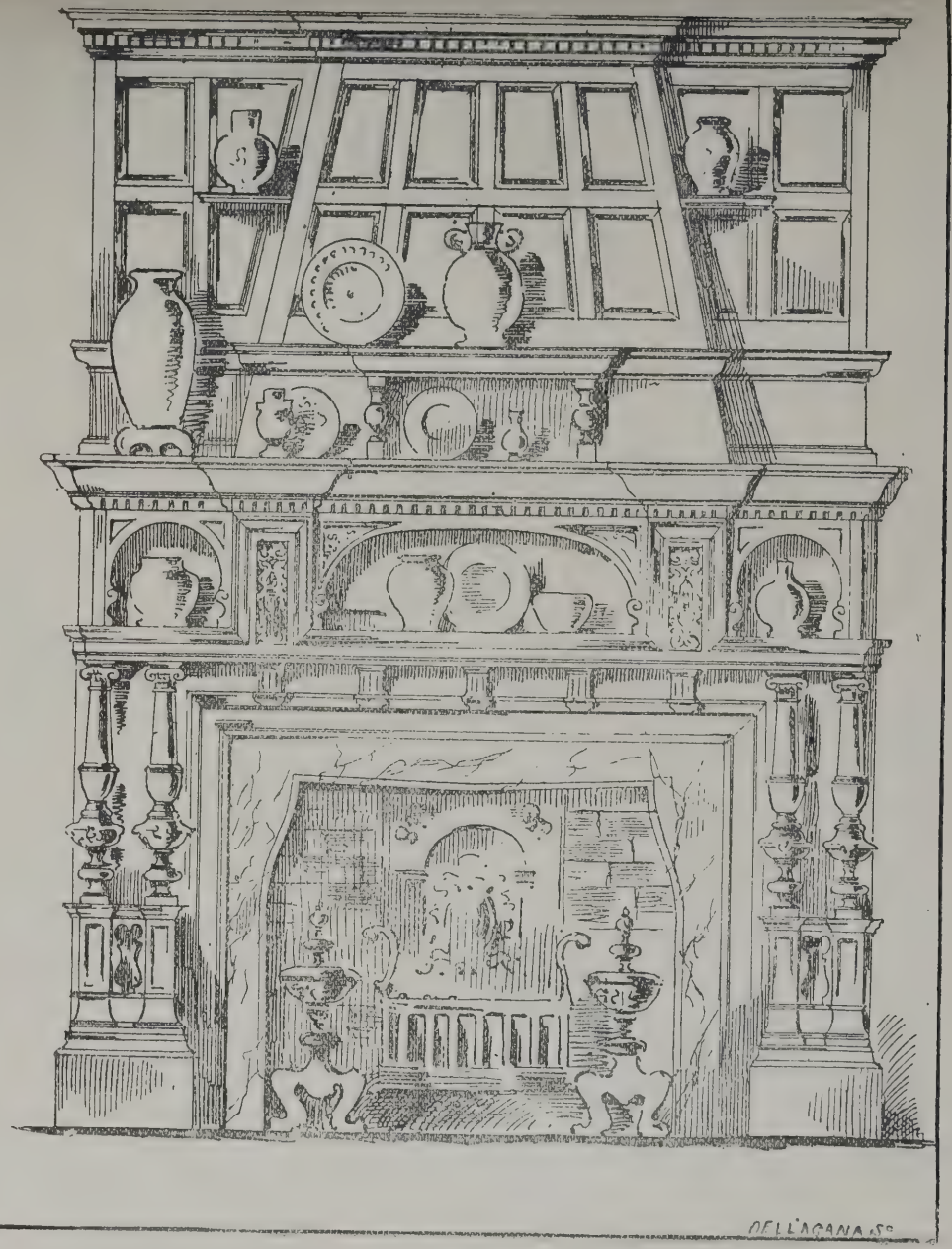
At the Cheadle County Court on Saturday, Annie Wearing sued Messrs. Stephen Seale and Co., quarry proprietors, of Hollington, for £179, damages for the death of her husband, Francis Wearing, who was killed, with a fellow-workman, whilst blasting at the defendants' quarry on May 9 last. Judge Jordan held that the defendants' manager had been guilty of gross negligence in allowing the men to work in a dangerous place, and he assessed the damages at £150. He declined to stay execution pending appeal.

The excavations at Rhamnus, in Attica, on the site of the famous Temple of Nemesis, have resulted in the discovery of important fragments of the statue of Nemesis by Phidias, of which some portions were already in the possession of the British Museum; a colossal statue of Themis intact, the work of Cheristratus, of Rhamnus; and a life-size statue of a priestess of Nemesis, with an inscription on the pedestal assigning it to the second century before the Christian era.

New co-operative stores have been erected at Finsbury Park, and special attention has been paid to the ventilation, which is carried out on the Boyle system, the latest improved form of the self-acting air-pump ventilator being adopted for the extraction of the vitiated air.


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MESSRS WALKER & SONS
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DELL'AGNA SC.

WAYSIDE NOTES.

ENCROACHMENTS on the ground outside the stipulated limits of a competition site, if not rigorously opposed by assessors, are an unfailing source of indignation among competitors, and very rightly, since, were such digressions allowed to pass unchallenged, the greatest injustice would be done to every competitor strictly complying with the conditions of the competition. It does not require very keen perception to recognise the injury done. All right-minded persons will be easily able to realise that, on an increased superficial area, it becomes a vastly less difficult task to afford the required accommodation; and, other conditions being equal, the architect with the larger space of ground at his disposal can produce the most effective design. At the same time, in criticising the action of Professor Roger Smith, the assessor in the Whitefield Tabernacle Competition, it is necessary to refrain from immediately coming to any conclusion as to the fairness or unfairness of his line of action. A little consideration should be shown. The professor, according to the report of the competition, states, so far as I can make out, that there was some error in the plan submitted to competitors, it not giving accurately the actual dimensions of the site. Here is, so to speak, "a nice point of law." The preparer of the plan to go with the instructions has apparently fallen into a regrettable error. If such be really the case, who is to suffer for it? Are the promoters to lose a good design because its author, by an exhibition of greater cautiousness, failed to comply with the apochryphal plan of site, or are the competitors to feel that they have been unjustly treated in that they were supplied with a plan which, true or false, should be binding in its dimensions? The questions seem more than ordinarily vexing. All that appears certain is that, as with the Six Hundred, someone has "blundered."

The point concerning the supposed discrepancy between the plan of site and the actual allotted ground should first be examined and settled. If the plan proves correct, the author of "Winged Heart" and others are at fault. They should be out of court; there is no questioning the fact. If, as stated by the assessor, the error exists, a verdict is less easily given with serenity of conscience. One thing occurs to me, and that is that if a certain minority of the competitors discovered the error, it would only have been acting in a frank and open manner to have communicated with the promoters of the competition, who would have drawn the attention of the whole number of competitors to the mistake in the plan, and have re-surveyed the site. Having discovered that an error of this sort had been made, it is not a very noble action to go on working in fancied advantage over the other competitors. Had this been the case, one would declare that the secretly enlightened competitors should be ignored and their designs thrown out. On the other hand, if it be that no despicable advantage has been taken by any competitor, and that others have been too negligent and easy-going to get matters put right or to ascertain facts and check dimensions for themselves, I should say that the extra-site people have it, and that the awards as made by Professor Roger Smith only require seconding by the profession.

The age is getting so prosaic and matter-of-fact, and every in and out of the world, even in its oddest nooks, ransacked by tourists, that one despairs of any discovery of an archæological nature, over and above broken urns and coins and pottery-ware—generally, by the way, self-explanatory—that may not be referable, within a few hours of its announcement, by some learned specialist to its proper class and order, numbered, labelled, and docketed in a manner that straightway knocks out what little of poetic mystery that it may at first sight have appeared to possess. Soon, the globe will be known, not to say "done" by thousands, in every nook and cranny of its four quarters, as well as its *fifth*—Romney Marsh, as I was given to understand, once upon a time. The slopes of the Andes, and the peaks of the Himalayas are losing their fascination through modern research; and the water-logged forests of the Amazonian tributaries are not what they formerly were. Even the once inaccessible precipices of Roraima have, I believe, been scaled by some more ingenious globe-trotters, and the dark mystery of an inland island, cut off from civilisation by thousands of feet of sheer, natural wall, has vanished before the glassy clearness of fact and reality. Darkest Africa is indexed, and procurable for 25 per cent. discount for cash. The "Nile season, 1890-91" is advertised with "through bookings" (!) to the Second Cataract, and fast sailing luxuriantly fitted steamers! "Whirr, whirr, all by wheels; whiz, whiz, all by steam." "Luxor and Karnak Hotels now open." Shade of Sesostris! The Wild East is on view at Earl's Court; the Wild West has gone—both the sham and reality, the Red Indian in top hat and patent leathers being an accomplished fact. Travelling in the once "Great Lone Land" is as easy as in Pall Mall; and I have heard of schemes for a railway through the comparatively small tract of land, labelled on maps "unexplored," on the Australian continent, where in a few years the last survivor of the bearded black fellows will commit suicide with his own boomerang.

I did hope when, on Tuesday last, I read the *Times* correspondent's account of his journey to Zinbabye ruins whilst with the British South Africa Company's camp on the Mashonaland Plateau, that for once we had something entirely novel and fresh in the way of a discovery of primitive architecture. Interesting, however, as are these ruins, I find that their brand newness must be of a qualified description. It appears that the ruins, the existence of which were known by hearsay, were long sought for and discovered by Mauch, the German traveller, and that, moreover, from his verbal descriptions, Baines in his "Goldfields of South-East Africa" has ventured an illustration. Nevertheless, mystery, profoundly deep, surrounds these remarkable ruins of the handiwork of a vanished race.

The Zanbabye ruins consist of a series of walls and circular buildings "of small granite blocks, about twice the size of an ordinary brick, beautifully hewn and dressed, laid in perfectly even courses, and put together without the use of a single atom of either mortar or cement." They lie at the edge of the Mashonaland Plateau, at the base of a precipitous "kopje," inhabited by one of the Mashona tribes, under a chief called Moghabi. The first feature to be noticed on approaching the kopje, says the *Times* correspondent, is the existence of an outer wall, about 4ft. high, running, so far as could be judged amid the dense jungle-like undergrowth, round the entire kopje. This wall was indeed traced for half a mile, beyond which the accumulation of vegetable growths prevented further exploration. Next are traces of an inner wall, difficult to follow for a similar reason; then "amid a perfect labyrinth of remains of small circular buildings—a mighty maze, but not apparently without some plan," south-west of the kopje, and about 300 yards from its base, is the main feature of these strange ruins—a high wall of circular shape, from 30ft. to 35ft. high, forming a complete inclosure of an area 80 yards in diameter. This wall is about 10ft. in thickness at the base, and tapers to about 7ft. or 8ft. at the top; and it is this feature the masonry of which is as above described—viz., built in small blocks of granite, about twice the size of an ordinary brick, beautifully wrought, and laid without a cementing medium of any kind whatever. A gap in the wall allows of entry into the building or inclosure, apparently a roughly-formed hole, but on closer examination, evidently, says the writer, "a well-defined, narrow entrance, as shown clearly by the rounded-off corners."

Here we have the general exterior aspect of the Zinbabye ruins. Inside the building, or inclosure, above described, containing dense undergrowth and quantities of trees hundreds of years old, and thus rendered difficult of examination, are traces of a further series of circular, or elliptical, walls, and close to the entrance stands a "conical-shaped tower, or turret, 35ft. in height and 18ft. in diameter at the base, built of the same granite blocks and consisting of solid masonry." A noteworthy feature of the inclosure is that "on the south-east front of the wall, and 20ft. from the base, runs a double-zigzag scroll, one-third of the distance round, composed of the same sized granite blocks, placed in diagonal positions." On the "kopje" itself, too, and on the hill-side, are numerous traces of remains of a similar character, circular buildings wedged in between boulders of rock, walled terraces, at least nine in number, and built on the very summit of the kopje—which commands a panorama probably unrivalled in African scenery—is "an enormous mass of granite blocks, to be used apparently as a fort, and which, owing to the complete absence of disintegrating forces in that climate, is in a nearly perfect state of preservation."

In spite, therefore, of Mauch and Baines, we have here room for much speculation as to the origin, purposes, and date of these mysterious ruins at Zinbabye, on the verge of the Mashonaland Plateau, in South-East Africa. The Portuguese have suggested that they are the remains of the city and palace of the Queen of Sheba, "in the land of Ophir"; but one might, perhaps, with slightly less propriety suggest that they were the summer residence of the heir-apparent of old Darkest Africa. Ancient Portuguese records refer repeatedly, it is said, to a people in South-East Africa, established long before their own arrival and working the gold mines. Major Erskine, writing to the *Times*, contemporary with its account of the ruins, suggests also that they were erected by an ancient people for the protection of rich gold mines. But there remains a wide field for research in connection with the ruins, so wonderfully interesting in these know-everything days. GOTH.

CHIPS.

The Metropolitan Public Gardens Association, 83, Lancaster-gate, W., has offered £100 to each of twenty metropolitan vestries and district boards, to be expended in planting plane trees in suitable public thoroughfares in each district, on condition that the local authorities agree to maintain the trees when planted, replacing such as may die.

At Rubery Hill Asylum a committee of the city council of Birmingham are proceeding with the provision of improved accommodation for nurses and for patients who require separate sleeping-rooms, which has been approved by the Commissioners in Lunacy. The contract is in the hands of Messrs. Barnsley and Sons, whose tender of £2,616 was the lowest one.

The foundation stone of the first school to be erected by the School Board for Benwell, near Newcastle, was laid in Delaval-lane, Benwell, on Wednesday. Mr. J. W. Thompson, of Pilgrim-street, Newcastle-on-Tyne, is the architect, and the contract has been let to Messrs. T. and W. Common, of Horsley, for £4,630. The school will accommodate 638 children.

A scheme is on foot at Chicago to build a play-house, modelled upon Messrs. Dodgson and Unsworth's plans of the Shakespeare Memorial Theatre at Stratford-on-Avon, including the memorial hall, the latter to contain a collection of relics, curiosities, souvenirs, books, engravings commemorative of the poet and his works.

St. Peter's Episcopal Church, Lathom-place, Edinburgh, was opened on Sunday after internal decoration of the chancel and the filling of the fine lancet windows in the apse with stained glass. The works have been carried out by Messrs. George Dobie and Son, of Edinburgh.

The Grantham board of guardians adopted at their last meeting plans for a new workhouse prepared by Mr. Valentine Green, recently selected in competition. The plans have been reduced, so that the accommodation will be for 200 instead of 262 inmates, as originally proposed. It has been decided to carry out the work in Ancaster stone in lieu of brick, at an estimated additional cost of £500, the roofing to be of Broseley tiles.

Mr. W. M. G. Singer, of Paignton, has accepted the design of Messrs. E. Appleton and Son, architects, Torquay, submitted in a limited competition, for new farmhouse and buildings at Blagdon, near Paignton, Devon.

A mission home for the Sisters of St. Raphael is about to be built at Knowle, near Bristol, from plans by Mr. John D. Sedding, of London. It is at present proposed to expend about £5,000 in providing accommodation for 50 children and 14 sisters, leaving the refectory, chapel, and other adjuncts to be built hereafter.

Johnston Church, Pembrokeshire, which is undoubtedly one of the most interesting churches in the diocese of St. David's, is so far dilapidated that it requires very careful repair. Messrs. Kempson and Fowler, of Llandaff, have been intrusted with the work, and, under their direction, the strictest conservative repairs are to be carried out.

A new post-office is about to be built in Aire-street, Goole, together with an arcade of shops adjoining, extending by the side of the office from North-street into Victoria-street. Mr. H. B. Thorpe, of Goole, is the architect.

CONTEMPORARY BRITISH BUILDERS.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

THIS is the fourth double-page plate issued in this series of portraits of representative firms. The first on the sheet is Mr. George Adamson, the senior member of the firm of T. H. Adamson and Sons, of Chiswick, Putney, and Ealing. The foundation of this firm was laid early in this century by the grandfather of the present members, who was a builder at Chiswick. He was succeeded by his son, the late Mr. Thomas Henry Adamson, sen., who, about 38 years ago, took his four sons into partnership. The eldest, unfortunately, met his death in the year 1878 by falling from a ladder at the North London Collegiate Schools. The subject of our illustration, Mr. George Adamson, was apprenticed in 1845 to Mr. Henry Poole, of Westminster, where he gained considerable experience in all kinds of masonry. The other members of the firm are Mr. William James Adamson and Mr. Frank Adamson. The following are some of the principal works carried out by this firm:—St. Andrew's Church, Surbiton; St. Olave's Church, Mile End; Christ Church and Vicarage, Epsom; St. Jude's Church, Peckham; St. Mark's Church, Marylebone-road; Holy Innocents' Church, Hornsey; and the schools at Mortlake under Sir A. Blomfield, A.R.A.; All Saints' Church, Putney, and the Interior Royal Military Chapel, Wellington Barracks, under the late Mr. G. E. Street, R.A.; Emanuel Church, West Dulwich, and the North London Collegiate Schools under Mr. E. C. Robins, F.S.A.; Trinity Church, Streatham, Messrs. George and Peto architects; St. Michael's Parish Hall, Bedford Park, Mr. Maurice B. Adams architect; Christ Church, Hendon, and Westminster Training School and Home for Nurses, Mr. S. Salter architect; St. Peter's Church, Hoxton; Presbyterian Church, Brockley; Wesleyan Church, Hammersmith; tower and spire St. Jude's Church, Kensington, Mr. H. Godwin architect; St. Dunstan's Church and Vicarage, East Acton, for the Goldsmiths' Company, the late Mr. Hesketh architect; All Saints' Church, South Acton, Messrs. Adams and Kelly architects; Congregational Church and Parsonage, and Isolation Hospital, Ealing; Congregational and Baptist Chapels, East Hill, Wandsworth; Corn Exchange, Mark-lane, and chapel and almshouses at Lee for the Merchant Taylors' Company, the late Mr. E. I'Anson architect; warehouses and offices in Budge-row; mansions at Petersfield and Eastbourne, and several houses at Bexley, under Mr. R. W. Edis; United Westminster Schools and United Westminster Almshouses, the late Mr. R. Arntz architect; The Friary, Windsor; several mansions in Wimbledon Park and at Wimbledon; Schools of St. Barnabas and St. Philip, Kensington; warehouses for Messrs. J. Allan, sen., and Co., and for the General Iron Foundry Co., Upper Thames-street; vestry hall and offices, St. George's, Bloomsbury, and schools, Little Russell-street, Mr. J. Peacock architect; buildings for the London and the Thames Rowing Clubs, Putney; house, Sutton-court, Chiswick, for Mr. W. Emerson, architect; warehouses and shops, Hammersmith, for Mr. W. N. Froy; houses at Wimbledon Common, Elstree, and Hampstead, and houses and studios Bedford Park, Mr. E. J. May architect; Eyot Villa and two houses, Chiswick Mall, for Mr. J. I. Thornycroft, Messrs. J. and J. Belcher architects; St. Peter's Presbytery, Palace-street, Pimlico, Mr. Bentley architect; house for Mr. Lloyd, Delahay-street, Westminster, Messrs. Isaacs and Florence architects; house at Sheen, Mr. T. Collcutt architect; No. 3, Upper Berkeley-street; Gunnersbury House, Hounslow; the vestry hall, Chiswick; dairy, Blackheath, for Express Dairy Company; warehouses and offices in Charing Cross-road for Messrs. Hinks and Son; the Gallions Hotel and Buffet at the Royal Albert Docks; Church of St. Michael and All Angels, Walthamstow, the late Mr. J. M. Bignell architect; and the new Parish Church of St. Alban, Teddington, Mr. W. Niven architect; also the alabaster and marble reredoses at St. Andrew's Church, Surbiton; St. James's Church, Derby; St. Stephen's Church, Gloucester-road, and St. John's Church, Putney. Mr. Adamson's portrait is the work of Mr. W. Wright, of Cheapside.

Mr. H. T. Ashby is the senior partner of the firm of Ashby Bros., of Goulston-street, Aldgate, E. The firm was established in 1818 in Bishopsgate-street by the late Richard Ashby (uncle of the present family). Mr. H. T. Ashby is a "Cockney" born in St. Mary Axe, 1835. He was educated at the City of London School, and began business in the office and workshops as apprentice in 1857. He practised as a quantity surveyor for some years before becoming partner in the firm. Their works and business are chiefly in London. A few of the buildings erected by them are the City Bank, Finch-lane; Chartered and Mercantile Bank of India, London, and China, Broad-street; Bank of New South Wales, Broad-street; National Bank of New Zealand, Broad-street; Bank of British Columbia, Lombard-street; Dimsdale's Bank, Cornhill; Hambro's Bank, Broad-street; Royal Bank of Scotland, Bishopsgate-street; Leadenhall House; Central Telegraph Station, Threadneedle-street; Messrs. Caldecott's warehouses, Cheapside; Messrs. I. and R. Morley's warehouses, Milk-street and Wood-street; many of the new houses in Cheapside. The above are only some of the buildings they have erected. The portrait given is from the studio of Messrs. Boning and Small, Baker-street, W.

Mr. William Brass is the proprietor of the firm of William Brass and Son, builders, Old-street, St. Luke's, &c. Among the works executed in the past may be mentioned the General Post Office (corner of Newgate-street); Savings' Bank Offices, Queen Victoria-street; Eastern District Post-office, Whitechapel-road; St. Dunstan's College, Catford; Hanwell Schools; Essex County Lunatic Asylum, Brentwood; Royal Chest Hospital, City-road; Great Northern Central Hospital; museum, Bartholomew's Hospital; University College (new wing); Baliol College, Oxford; Memorial Chapel for Prince Imperial, Chislehurst; Carpenters' Hall; Cutlers' Hall; Haberdashers' Hall and adjoining warehouses for Messrs. Tapling; Alliance Bank, Southwark; National Provincial Bank, Baker-street; Manchester Hotel; New University Club, St. James-street; Civil Service Stores, Queen Victoria-street; Dashwood House, Old Broad-street; Bon Marché, Brixton; Economic Life Assurance Buildings, New Bridge-street; premises, Aldersgate-street, Messrs. Maw, Son, and Thompson; premises, Farringdon-street, Messrs. Marcus Ward and Co.; fruit sale rooms, Monument-yard; extensive business premises, Bayswater, for Mr. Whiteley. At the present time the firm are carrying out fortifications at Sheerness for the War Department; the triennial contract for works and repairs to public buildings throughout the London district; and substructure for the New General Post-office, St. Martin's-le Grand, under H. M. Office of Works; also contracts for the London County Council and Corporation of the City of London, and banking premises, Threadneedle-street and Old Broad-street. Mr. Brass's photograph was taken at Brighton by Messrs. E. Hawkins and Co.

Mr. R. C. Foster, of Rugby, was born in 1849, and educated for the architectural profession at King's College, and South Kensington, and under Mr. Arthur Evers, of Gt. Marlborough-street, exhibited in the architectural room of the Academy in 1877 and 1878. Leaving architectural work, he became a contractor in 1876, and carried out several contracts for the Great Northern Railway and others. In 1879 he joined W. Sidney Dicksee (a brother of Frank Dicksee, A.R.A.) in succeeding, under the title of Foster and Dicksee, Mr. John Bromwich, of Rugby, a well-known building contractor, who had carried out many works under Mr. Salvin, Sir M. D. Wyatt, and other leading architects. Their town works in progress are as follows: New Bankruptcy Offices, Carey-street, S.W. (£50,000), for H.M. First Commissioner of Works, Mr. John Taylor, architect; town house, 20, James-street, S.W. (£10,000), for Mr. E. Heinemann, Mr. Reginald J. Blomfield, M.A., architect; South London Art Gallery, Camberwell (£5,000), Mr. Godfrey Pinkerton, architect. Works carried out in town: Block of chambers, Park-lane, W. (£14,000), for Sir Julian Goldsmid, Bart, M.P., Mr. Alfred Waterhouse, R.A., architect; town house, Pont-street, S.W. (£12,000), for Sir Kenneth Matheson, Bart., Mr. C. W. Stephens, architect; town house, Cadogan-square, S.W. (£7,000), for Mr. H. L. Arbuthnot, Mr. Edwin T. Hall, F.R.I.B.A., architect; 49, 51, and 53, Pont street, and 22 and 24, Cadogan-square, S.W. (about £4,500 each) for Mr. S. Prince and others, Mr. Edwin J. Hall, F.R.I.B.A., architect; foundations, Sion College, Sir Arthur Blomfield, architect; 52a, Berkeley-square, and additions to 52, Mr. M. E. Macartney, architect; Parochial Hall, Brixton, Mr. Edwin T. Hall, F.R.I.B.A., architect; additions to St. Saviour's Church, Chelsea, Rev. E. Geldart and Mr. J. R. Vining, architects; 30 and 32, Pont-street, S.W. (about £5,000 each), Mr. C. W. Stephens, architect; thirty-two large houses, two shops, and four sets of stables at Beech Hill-park, Hadley Wood, N. (about £50,000 or £60,000 in all), for Mr. Charles Jack, Mr. J. Hall, architect; artisans' dwellings, Whitechapel, for Messrs. Carter and Sons; additions to business premises, for Messrs. Burroughes and Watts. Their country works in progress are: Mansion, Hatchford Park, Cobham (£15,000), for Mr. W. Chinnery, Mr. Rowland Plumbe, F.R.I.B.A., architect; large house, Colwyn Bay (£8,000), for Miss Gregory, Mr. Gerald C. Horsley, architect; large house, Barnsdale, Oakham (£3,000), for Capt. the Hon. C. W. FitzWilliam, Mr. E. J. May, F.R.I.B.A., architect. Works in country: Restoration of Stanford Hall, for the Rt. Hon. Lord Braye (£20,000); school chapel, Shrewsbury (£8,000), Sir Arthur Blomfield, architect; large additions to mansion and new chapel, Newnham Paddox, Warwickshire (£50,000), for the Earl of Denbigh, Mr. Thos. Wyatt, architect; rebuilding Blackmore Park, Upton-on-Severn (£18,000), for Mr. J. V. Hornyhold, Mr. David Brandon, architect; additions to Shandon Court, Kent (£7,000), for Major Fletcher Lutwidge, Mr. M. E. Macartney, architect; additions to Southlands, Kent, for Mr. J. Leedham White, Mr. M. E. Macartney, architect; additions to Speldhurst, Kent, for Mr. J. Pierson, Mr. M. E. Macartney, architect; mansion, Watergate House, Hants (£14,000), for Mr. R. Christy, Mr. A. Waterhouse, R.A., architect; mansion, Rosehill, Henley-on-Thames, for Mr. H. Micklem, Messrs. Ernest George and Peto, architects; mansion, Trescawen, Anglesey, (£18,000), for Capt. Pritchard Rayner, Mr. R. G. Thomas, architect; house, Kent Hatch, Edenbridge (£5,500), for Mr. F. Scorer, Mr. M. E. Macartney, architect; mansion, Burton Lazars, Melton Mowbray (£14,000), for Capt. Ashton, Mr. R. W. Johnson, architect, and various other public and private contracts. Mr. Foster's likeness was produced by the camera of Mr. Thos. Fall, of 10, Baker-street, W.

Mr. John T. Chappell, of London and Brighton, whose portrait we give this week, commenced business at Brighton and Steyning some thirty years since, removing about ten years subsequently to London to his present extensive works and offices, Thames Bank Wharf, Grosvenor-road, and 149, Lupus-street, Pimlico. The following is a list of some of the principal works carried out by him:—Baron Grant's mansion at Kensington (recently pulled down); London and County Bank, Oxford-street branch; London and Westminster Bank, Brompton branch; Cannon-street Buildings, Cannon-street, E.C.; National Hospital, Queen-square, for Epilepsy and Paralysis (Albany Memorial); New Offices, Eastcheap, for Sir H. Peek, Bart; Sion College, Victoria Embankment; Schools for the Royal Commissioners of the Patriotic Fund at Wandsworth; St. Mary's Church, Whitechapel, E.; Townshend Schools, Rochester-row, Westminster; Warehouses, Falcon-street, City; Camberwell Workhouse; Kensington Workhouse; Small Pox Hospital, Fulham; additions to Marylebone Workhouse; Museum Mansion (residential flats, &c., Great Russell-street, Bloomsbury); Ship and Turtle Tavern, Leadenhall-street, City; City Police Station, Cloak-lane; Church in the Mall, Notting-hill Gate; shops and offices, Ludgate-hill; City of London College, Moorfields; new wing to Chest Hospital, Victoria Park; Fitzallan Chambers, Arundel-street, Strand; Hove Townhall and public buildings; various extensive works on the West Brighton Estate; third County Lunatic Asylum for Middlesex, at Banstead, Surrey; third County Lunatic Asylum for Surrey, at Cane Hill, near Coulsdon, Surrey; Imbecile Asylum, and additions thereto, at Caterham, Surrey, for Metropolitan Asylums Board; Municipal Buildings, Reading; additions Surrey County Lunatic Asylum, Brookwood; Convent of the Sacred Heart, Brighton; Goldstone Reservoir, Brighton; St. Mathew's Church, Kemp Town, Brighton; gas-holder tank, Black Rock, Brighton; Surrey Houses, Arundel-street, Strand; Croxley Paper Mills, near Watford; Brighton and Hove Dispensary; dwellings at Gainsford-street, Horselydown; stabling at Chelsea, for the London Improved Cab Com-

pany; at Walham Green, for the London Road Car Company, Limited; and at Conway-street, Hove, for the Brighton Omnibus Company; offices at Mark-lane and Great Tower-street, for the Metropolitan and Metropolitan District Joint Committee; brewery stores at Brixton; new premises at Douglass-place, Bayswater, for Mr. Whiteley; additional cellarage at Tottenham for the Lager Beer Brewery Company; bank at Worthing for the London and County Banking Company; schools at New Cross for Haberdashers' Company; mansions at Cheyne Walk, Chelsea; Museum Mansions, Great Russell-street, Bloomsbury. Mr. Chappell has also just completed the rebuilding of Colonel North's mansion at Avery-hill, Eltham. We understand he is now commencing the building of the New General Post Office (North), St. Martin's-le-Grand; dwellings at Marlboro'-road, Chelsea, for Guinness' trustees, and has numerous other important contracts in hand. Mr. Fall, of Baker-street, is the artist responsible for the portrait reproduced herewith.

Mr. H. H. Bartlett is the senior member of the firm of Perry and Co., Tredegar Works, Bow. The principal works on which they have been engaged during the last fifty years would take too long a list for our space, so we only give a few of the leading ones:—Dramatic College, Metropolitan Asylums buildings at Fulham, Shoreditch Town-hall, Shoreditch Workhouse, St. Thomas's Hospital, Burlington House, Prince's Mansions, Victoria-street; Queen's Mansions, Victoria-street; Bethnal Green Museum, City Carlton Club; extension of South Kensington Museum, various hospitals, town-halls, and public buildings; all the several buildings and palaces for the Government repairs, building the Houses of Parliament, &c.; new station buildings at Waterloo; the various railway widenings and stations on the S.W. Railway system; new piers and railways in different parts of England; large buildings in Cairo, Egypt; dock works; hotels—some of the largest in London; very numerous works under the War Department, also some under the Admiralty; banks in the City and at Charing Cross; and at present they have in hand all the buildings of the People's Palace, new Tower Bridge; large block, Albany Buildings, Victoria-street; new station, renewal of bridges, and widening of the line at Vauxhall and Nine Elms; new wing at the London Hospital; new Seamen's Hospital; sewage works for the West Ham Corporation; Avenue Hotel, Kensington-gardens; and works at Farringdon Market, besides various ordinary buildings, bridges, &c. Mr. Bartlett's photograph is by Mr. Deneulain, of the Strand.

[In the sixth line from the bottom of page 248 of our issue of 22nd August last, it was stated that Mr. King Church purchased the Cakemore Estate in 1884, whereas it should have been stated that the purchase was made in 1874.]

NOTES ON BUILDING PRICES.—XI.

By John Leaning.

DRAINS.

AGRICULTURAL drain is sometimes laid where there is reason to anticipate damage to the foundations of a building from the surface water. When a large area, several acres for instance, is dealt with, it is customary to value it by the acre for labour and material (see "Drainage of Lands, Towns, and Buildings"—Dempsey). The tables of cost would be more valuable to the estimator if they included the time spent upon the various labours. The date at which tables were produced is rarely given, and the gradual rise in wages which has taken place within a few years renders many of them useless. Ganerally, the work dealt with by the builder, or building surveyor, consists of a few lines of pipes, which are better measured and valued in the same manner as for stoneware drains, but per *yard* run, in accordance with custom, instead of per *foot*, and, including digging, filling-in, and ramming; the size of pipe used is now seldom less than 2in. bore. The cost of 2in. pipes in 15in. lengths, delivered in London, is 35s. per thousand = 1,250ft. = 417 yards lineal nearly. A common price paid for them in the field is 30s. per thousand; the weight, about 29cwt. They are laid dry, the joints just abutting, by a fairly intelligent labourer. In valuing agricultural drains, the cost of the digging per cubic yard must first be settled in accordance with the nature of the soil, on the principle before described, and 20 per cent. added to that price for the extra trouble and comparatively small quantities. A trench 18in. wide can be excavated to a depth of 2ft.; but beyond that depth the width would be 24in.

The value of 2in. agricultural drain, and digging 2ft. average depth, and filling-in and ramming, would be as follows: Digging, per cubic yard, $4\frac{1}{2}$d. + 20 per cent., $\frac{3}{4}$d. + filling and ramming, $5\frac{3}{4}$d. = 11d.

	2in. pipes, per yard	1d.
3·0	Laying, per yard	$\frac{1}{4}$
1·6	Digging, &c., $\frac{1}{3}$rd yard..	$3\frac{3}{4}$
2·0	cube, at 11d. ..	
—9·0		—
	Cost per yard	5

The builder putting in small quantity of agricultural drains would do his work in the usual fashion of drain trenches. Large quantities would be put in with the well-known draining tools, spades of various widths and unusual depths, 13in. to 18in. being used, so as to produce a trench only 3in. wide at bottom. A trench 12in. wide at top, 3in. at bottom, and about 3ft. deep may be produced by one cut from each of three different sizes of spades.

The price of glazed stoneware drains *in London* is regulated by an agreement amongst the vendors, by which the published list always shows the same prices, but the trade discount varies. The list, as published by the merchants, is to be found in the current price books. The merchants will deliver within four or five miles without extra charge if a cart-load is ordered.

Drain-pipes are usually carried by the London merchants in a one-horse van, of size specially adapted to the purpose, 9ft. by 4ft. 9in. by 2ft., of capacity as follows:—4in. pipes, 200; 6in. pipes, 120; 9in. pipes, 55; 12in. pipes, 35; 15in. pipes, 22; 18in. pipes, 18.

The average one-horse van is about 9ft. by 4ft. by 2ft., and will carry about 2 tons. A knowledge of the size of vehicles is useful to the estimator, as he can the more readily reckon the cost of carriage, and he will find it to his advantage to note the quantities of materials carried under various conditions, the sizes of the vans or carts, and the number of horses, the number of men occupied on loading and unloading, and the time spent upon such work.

The trade catalogues of the large manufacturers, such as the Bristol Waggon Works Company, contain much useful information as to sizes, carrying power, and price of carts, vans, waggons, &c.

The present trade discounts off list prices of town-made pipes are: 6in. and under, 45 per cent; 9in., 40 per cent.; 12in., 35 per cent.; 15in. and 18in., 30 per cent. For country-made pipes, 5 per cent. more than these, and for very large quantities $7\frac{1}{2}$ per cent. more. As the country-made pipes are much more frequently used than any other, whatever may be proposed to the contrary, the examples and the following list are based upon the discount for country pipes:—

Prices of pipes delivered free in London after deducting trade discount:—

Bore of pipe	50 per cent. 2in.		3in.		4in.		6in.		45 per cent. 9in.		40 per cent. 12in.		35 per cent. 15in.		18in.		
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	
Straight pipes	0	$1\frac{3}{4}$	0	$2\frac{1}{4}$	0	3	0	4	0	$7\frac{3}{4}$	1	$1\frac{1}{4}$	1	$11\frac{1}{2}$	2	$7\frac{1}{4}$	per foot.
Bends	0	6	0	$7\frac{1}{2}$	0	$10\frac{1}{2}$	1	$1\frac{1}{2}$	1	11	3	$3\frac{1}{2}$	5	10	7	$9\frac{1}{2}$	each.
Single junctions and taper pipes, 2ft. long, charged in list as 4ft. straight pipes	0	7	0	9	1	0	1	4	2	$6\frac{3}{4}$	4	$4\frac{3}{4}$	7	$9\frac{1}{2}$	10	$4\frac{3}{4}$	each.
Double junctions, 2ft. long, charged as 6ft. of straight pipe	0	$10\frac{1}{2}$	1	$1\frac{1}{2}$	1	6	2	0	3	$10\frac{1}{4}$	6	$7\frac{1}{4}$	11	$8\frac{1}{2}$	15	$7\frac{1}{4}$	each.
Siphon traps long	1	0	1	3	1	9	3	0	5	6	9	0					
S and P traps	0	9	0	$10\frac{1}{2}$	1	0	3	0	5	6							

Large quantities may be bought of the Midland manufacturers at from $7\frac{1}{2}$ to 10 per cent. below the above rates, carriage paid to a London station, or to a country station of equal distance from the manufactory; but this involves carting by the purchaser. Approximate number of pipes to a ton:—

	2in.	3in.	4in.	6in.	9in.	12in.	15in.	18in.
Pipes	285	200	150	90	42	27	18	14
Siphons and gullies		203	150	68	33	25		
S traps		224	124	62				
P traps		320	203	80				

Tested pipes cost generally 20 per cent. more than the foregoing rates, and each length is marked T. For the Stanford jointed pipes the trade discount is 10 per cent. off the published list. The trade discount off gully traps and flap traps is the same as for 12in. pipes (40), stoneware closet pans, same as for 18in. pipes (30). The customary measurement and valuation of drain pipes is per foot run, including digging, filling-in, and ramming, up to 3 or 4ft. deep, it may generally be assumed that no strutting or planking will be necessary, beyond that depth it is often necessary. The extent of it will depend upon the nature of the ground. It is rarely the case that the poling boards require to be close together; they may *generally* be from 4in. to 6in. apart. In the neighbourhood of London, the digging, filling-in, and ramming for drain trenches is often priced at 1d. per foot run for each foot in depth.

A bricklayer and labourer will lay and joint and cement in aday of 10 hours.

		Per ft. Constant	A bushel of cement and sand will joint.
4in. pipes	100ft. = $1\frac{1}{2}$d. .. ·010 ..		150ft.
6in. ,,	66ft. = $2\frac{1}{4}$d. .. ·015 ..		100ft.
9in. ,,	44ft. = $3\frac{1}{4}$d. .. ·022 ..		65ft.
12in. ,,	33ft. = $4\frac{1}{2}$d. .. ·030 ..		50ft.
15in. ,,	26ft. = $5\frac{3}{4}$d. .. ·038 ..		40ft.
18in. ,,	22ft. = $6\frac{3}{4}$d. .. ·045 ..		32ft.

The labourer's constant attendance is necessary to hand the material, and assist in the adjustment of the pipes.

A few examples will illustrate the method of valuing drains.

Example 1.—4in. drain jointed in cement and the joints puddled around with clay and 4ft. excavation.

1.0
2.0
4.0

		s.	d.
—3.0 = $\frac{8}{27}$	cube yard, dig, fill, and ram, at 11d., as before		$3\frac{1}{4}$
	4in. drain, per ft. run		3
	Laying $1\frac{1}{2}$d., cement $\frac{1}{4}$d., and clay $\frac{1}{4}$d.		2
	Cost per foot		$8\frac{1}{4}$

Example 2.—6in. drain as before, and 8ft. excavation.

1.0
2.0
8.0

		s.	d.
—16.0	cube digging, about $\frac{3}{4}$d. for each ft. in depth, or $\frac{6}{27}$, at 11d.		$6\frac{1}{2}$
	6in. drain. per ft. run		4
	Laying $2\frac{1}{4}$d., cement $\frac{1}{4}$d., clay $\frac{1}{4}$d.		$2\frac{3}{4}$
1.0			
2.0			
6.0			
—12.0 = $\frac{1}{2}\frac{2}{7}$	of a cubic yard, throwing out only, at $2\frac{3}{4}$d. the lower 6ft. of earth.		$1\frac{1}{4}$
	Staging (boards laid on the poles, or struts of the strutting and planking) about 5ft. by 2ft.—say		1
	The real value is the labour of fixing and removal, plus $7\frac{1}{2}$ per cent. per annum on the original cost of the planking.		
	Cost per foot	1	$3\frac{1}{2}$

The strutting and planting, if necessary, would be valued as hereafter described.

The valuation of bends, junctions, taper pieces, &c., is in accordance with the usual method of measurement, "Extra for" as the length of bend varies, some being 2ft. long, and some less; an average length reasonably applicable to all cases may be taken as 1ft. 6in.

The value of extra for bends is as follows:—There is no extra cost on the jointing or laying.

Extra for 4in. bend.	d.
Cost price of 4in. bend	$10\frac{1}{2}$
Deduct 1ft. 6in. of 4in. pipe	$4\frac{1}{2}$
	6

Junctions are of equal length to the pipe upon which they are extra. There is no extra cost on the jointing or laying. Siphon traps of the S and P

type would be equal in length when laid to 18in. of pipe, the longer shape 24in., and the fixing equal to that of junctions. The long siphon traps, the Weaver type, would be equal in length to 2ft. 6in. of pipe, valued as follows :—

	s.	d.
Cost price of 4in. siphon	1	9
Deduct 2ft. 6in. of 4in. pipe	0	7½
	1	2½
Extr labour laying.....	0	2
	1	4½

The smaller works, which usually appear in a bill of quantities for drains, can only be dealt with by resolving them into their elements. The basis of valuation would be the normal value of the larger quantities. The modification of the price per yard cube of concrete or foot of brick-work, as the case may be, would be an increase by a purely arbitrary percentage dependent upon experience, and it should be remembered that, as the particular article increases in number, so the percentage should decrease. Traps or gullies, which are generally bedded in concrete, would be valued in some such way as follows :—

No. 22.—Doulton's (Lambeth) (Fig. 13*b*) yard gully with cast-iron grating bedded in and including cement concrete 18in. by 15in. and digging and connecting with drain.

					s.	d.
2	0					
2	0					
1	3	5	0	Dig and wheel $\frac{5}{27}$th cubic yard at 6¼d.	0	1¼
1	6					
1	6					
1	3	2	10	Cement concrete.		
	9					
	9					
	9		5	Deduct. Void.		
		2	5	= nearly $\frac{1}{11}$th cubic yard at 11s. 8d.	1	0¾
				Trap. List price, 9s. discount, 1s. 4d. = ...	7	8
				Fixing and connecting. Bricklayer ¾ of an hour at 9d.	0	6¾
				Cement	0	1
				Labourer, ¼ of an hour at 5¾d...	0	1½
				20 per cent. on digging and concrete (1s. 2d.) for small quantities	0	2¾
					9	10

Small cesspools, inspection pits, &c., must be dissected in a similar manner, as in the following example :—

Brick cesspool, 1ft. 6in. by 1ft. 6in., and 1ft. 6in. deep, all in clear, of half-brick sides and brick flat bottom, all built and rendered in cement on lime concrete, 6in. thick, including 2½in. tooled both sides York cover, 2ft. 3in. by 2ft. 3in., with tooled edges, and digging and connecting with two drains.

2	9			
2	9			
2	3	17	0	Dig and wheel.
2	9			
2	9	3	9	Lime concrete.
	6			
2	3			
2	3			
	3	1	3	Brick in cement.
7	6	11	3	Half-brick in cement.
1	6			
2	3			
2	3	5	1	2½ tooled York cover.
9	0	9	0	2½in. tooled edge.
1	6			
1	6	2	3	render 1 coat in cement.
6	0			
1	6	9	0	
2		2		make good drain-pipe to ½ brick-work in cement.

Slopes.—Formerly the surveyor would, in the measurement of trench-digging make a certain allowance for sloping sides to trenches. This practice is obsolete. When the sides of a trench will not stand vertically without support, strutting and planking is always allowed for.

Strutting and Planking.—The excavator's items of a bill of quantities or a schedule are often described to include strutting and planking in some such form as follows :—"Digging straight or curved on plan, except for wells, drains, or pipes, including levelling bottom of trenches or forming same to proper falls, as may be ordered; cutting steps, providing, fixing, and removing shoring, close-planking and strutting where required, not exceeding 6ft. in depth." The character and extent of strutting and planking varies greatly with the nature of the soil and the state of the weather. The sides of an excavation in loose sand may require the planks close together and supported by many struts. In clay soil the planks might be a foot apart, and in places would require none. As a familiar instance, a trench 6ft. deep and 4ft. wide in stiff clay would generally have 1in. or 1½in. vertical boards about 7in. or 9in. wide and about 4ft. long, 12in. apart, one 9in. by 3in. waling piece on each side of trench, and one row of struts about 5ft. apart, generally short pieces of scaffold-pole. Arrangements of poling and planking of trenches are illustrated in Seddon's "Builders' Work" and Hurst's "Tredgold's Carpentry." If strutting and planking is left in its place, as in some cases of underpinning where it is impossible to withdraw it, the cost of the wood plus the fixing and profit is the proper price, if new material is used; if old material, about a third the price of new is a customary rate. Strutting and planking to trenches is usually described as follows :—

24ft. run. Strutting and planking to sides of trenches 4ft. wide and 6ft. deep, one side measured for two; a common contract price for this would be 1s. per foot run. The poling boards would be "ends," as they are called, which may be purchased at the timber sales or the wood imported as firewood and sold at the firewood dealers at about £6 per fathom of 6ft. by 6ft. by 6ft = 216c.ft. These ends may be selected of any thickness and of all varieties of length from 3ft. to 6ft. at the same price per fathom. The cartage for four one horse loads per fathom would also be added, say, 12s., total, £6 12s., or about $\frac{7}{8}$d. per foot superficial for 1½in. The waling pieces, 9in.. by 3in. would cost about 2½d. per foot run. The poles would be scaffold poles, cut to lengths, cost about 1¼d. per foot, including the cutting. The valuation of the above item would be as follows :—

				£	s.	d.
2/24	0					
6	0					
288	0	1½in. boarding delivered at 7s. 4d. per square		1	1	1½
2/2/24	0					
96	0	9in. by 3in. waling piece, 2½d. per foot		1	0	0
2/10/ 3	9					
75	0	Struts 3ft. apart, 1¼d. per foot		0	7	9¾
				2	8	11¼
Interest on capital at 5 per cent. p.a.						
Depreciation at 2½ per cent. p.a.						
Say, one month in use at 7½ per cent. p.a. on £2 8s. 11¼d. = 3s. 8d. ÷ 12					0	4
288ft. fixing and removal at 2s. 6d. per square					2	2½
Cartage to yard one load at					3	0
Divide by 144ft. (one face for two)..					5	6½
Cost per foot superficial about					0	0½
Feet in depth						6
Cost per foot run.....					0	3

Strutting and planking to an excavation like a basement would be described by its superficial area. Taking as an example an area 40ft. by 40ft., and 6ft. deep, a calculation on the same principles would produce the following results :—

				£	s.	d.
160	0					
6	0					
960	0	1½in. poling boards as before, at 7s. 4d. per square		3	10	4¾
2/160	0					
320	0	9in. by 3in. waling pieces at 2½d.		3	6	8
4/9/ 4	0	144	0	9 × 3 sole pieces for struts (5ft. apart) (=27·0 cube) 2½d.	1	10	0
4/9/ 3	6						
	4½						
	3	11	10	Fir struts.			
4/9/ 6	6						
	5						
	4	32	6	Ditto.			
		44	4	At 1s. 6d.	3	6	6
					11	13	6¾
Say one month at 7½ per cent. per annum on £11 13s. 6¾d. = 17s. 7d. ÷ 12 =					0	1	5¾
Waste 5 per cent. on £3 6s. 6d.					0	3	4
960ft. fixing and removing planking, at 2s. 6d. per square					1	4	0
71⅓ft. labour and nails fixing struts, at 4d.					1	3	9
Cartage to yard, two loads, 3s.					0	6	0
Divided by 960ft.					2	18	6¾
Cost. per foot superficial ..						¾d.	

It is rarely the case that more than the foregoing is required. When the earth requires more support than this affords, 3in. planks are used instead of poling boards, sometimes shod with iron, and driven like piles. When still more security is required, square piles are used. The valuation of such work presupposes a knowledge of civil engineering, and is beyond the scope of these Notes.

The section "Quantities and Costs" of the Index of the *Transactions* of the Institute of Civil Engineers contains a number of references as to cost of coffer dams, piling, concrete in large masses, and similar works. The method of valuation of piling depends upon the mode of measurement, for which see Leaning's "Quantity Surveying."

(*To be continued.*)

CHIPS.

The building of a new bridge over the river Avon has just been completed near Bristol, by which it is intended to connect St. George with Brislington. The bridge, which has been built entirely of steel, has a span of 125ft., its breadth being 30ft. It consists of two bow spring lattice girders, each weighing 33 tons, and the floor of the structure is composed of Lindsey's patent troughing, Mr. Lindsey himself being the designing engineer. Messrs. Lysaght and Co., whose works adjoin the site, were the contractors.

Foundation stones of a new Wesleyan chapel were laid at Beverley on Thursday, the 2nd inst. The building is being erected from designs by Messrs. Morley and Woodhouse, of Bradford and Bolton, is Italian in style, and will cost £4,000. The chief contractors are Messrs. G. and R. Pape, of Beverley.

A public drinking fountain erected in the Ropery Meadow at Ilfracombe was presented to the town on Friday. It has been erected by Mr. J. P. Huxstable, of that town.

The Bishop of Carlisle consecrated on Thursday, the 2nd inst., the new Church of St. Mary, Cumrew, near Carlisle, which has been built on the site of the old church. The new building is designed in the Early English style. Mr. G. D. Oliver, of Carlisle, is the architect.

The new Roman Catholic School Church in Seaforth-vale, Seaforth, was opened by Dr. O'Reilly, Bishop of Liverpool, on Sunday. It is of brick, and is capable of sitting 300 persons. The building was erected from the designs of Messrs. Sinnott, Sinnott, and Powell, of Liverpool, by the contractor, Mr. G. E. Mulholland, of Great Crosby, and Mr. R. I. J. Irwin was the clerk of the works.

A new organ was opened in Christ Church, Yeovil, on Sunday. It has been built by Messrs. Vowles, of Bristol, and cost £260.

A new screen and choir-stalls were used for the first time in All Saints', Hull, last week. The new fittings, which have been carved by Messrs. Elwell and Son, of Beverley, from designs by Mr. Temple L. Moore, of London, are of wainscot oak, richly carved. The low screen is composed of tracery panels in deep relief, with moulded uprights between, decorated with carved pateras. The top rail is carved with vine foliage, and has an inscription on a scroll. The stalls are 12ft. long, having tracery panels terminating in a canopy with pendent tracery, and a cresting.

On Friday Mr. S. J. Smith, C.E., held an inquiry at New Swindon regarding an application made by the local board to the Local Government Board for sanction to borrow £22,860 for the purpose of buying a recreation ground for the town. Some opposition was raised on the ground that the site was too far from the town. The clerk to the board explained that the site was the most available one that could be obtained, and the price, £88 per acre, a moderate one.

Mr. Herbert Gribble's Armada Memorial on Plymouth Hoe will be unveiled on Wednesday week, the 21st inst., by the Duke of Edinburgh.

A memorial-stone was laid on Saturday last at the new mission schools of the Methodist New Connexion, Alexandra-road, Ashton-under-Lyne. The contractor is Mr. John Robinson, and the amount of the contract £1,228. Mr. J. H. Burton is the architect.

Building Intelligence.

Aberystwith.—The new parish church was consecrated on Tuesday week. It is English Decorated in style, and consists of a chancel 44ft. by 25ft.; an organ chamber and morning chapel, each 25ft. long and 18ft. wide; a nave with side aisles, of a total width of 72ft. and 61ft. long (intended eventually to be 100ft. long); two vestries, and north and south porches. The principal feature of the chancel consists of a five-light east window, 15ft. wide and 25ft. high over all, with tracery, and filled with painted glass. The subject is the "Ascension of our Lord," together with St. Michael and All Angels, to whom the church is dedicated. This window was designed and executed by Mr. Alfred O. Hemming, of 47, Margaret street, Cavendish-square, W. Under the window is a reredos in Ancaster stone, by Mr. Boulton, of Cheltenham. In the morning chapel is a three-light east window, filled with painted glass by Mr. A. O. Hemming, the subject being "The Crucifixion." The architects are Messrs. Nicholson and Son, of Hereford; the contractor was Mr. Thomas Price, of Hay; and Mr. John Evans, of Aberystwith, acted as clerk of works. The stone carving throughout is by Mr. Boulton, of Cheltenham, and the oak carving by Mr. Geflouski, of Bath. The church and site have cost about £8,000 altogether.

Edinburgh.—The Edinburgh Central Meat Market Company's premises in Ponton-street were formally opened on Friday. Adjoining the Western Dispensary, the market, which is built of brick, with facings of Corncockle stone, measures 80ft. by 80ft. The side walls are 18ft. high. The quantity of meat which can be stored is 110 bullocks, 220 quarters, 450 sheep, and 200 cuts of meat. The cranes, which occupy the space on each side of the main passage, are provided with movable hooks, while the conduct of business is further facilitated by a couple of automatic "travellers." The total cost of ground and buildings is about £4,500. The contractors were Messrs. James Duncan and Son, Grove-street; and the architect Mr. W. H. Grey, George-street, Edinburgh.

Faulkland, Somerset.—The formal opening of Turner's Tower took place on Friday week. The tower, which is situated about half a mile on the Radstock side of the village, and which has taken over two years in construction, is square, rising to a height of 200ft. from the foundation to the top of the spire, being built of native stone until the building reaches the height of 136ft. above the ground. The remainder is composed of wood, which is fastened to the masonry by bolts. The woodwork is divided into two sections, the first being 12ft. square, surrounded by a balcony, the other section being 7ft. square, surmounted by a balcony, each balcony being surrounded with pitch-pine railing. On the top of the smaller balcony is a spire, which rises some 20ft. higher. The tower is ascended from the inside by means of a spiral oak staircase, which is well lighted. Adjoining the tower is a room 50ft. by 15ft., which is known as the ball-room. Underneath are refreshment rooms, offices, caretaker's rooms, and lavatories. The buildings have been erected at a cost of £4,000. The architect and builder was Mr. J. Willcox, of Perry Hill. The masonry work was carried out under the foremanship of Mr. T. Cottle, of Freshford, Wilts. The views from the tower are most extensive, extending over parts of Wilts, Dorset, Gloucester, Somerset, Berks, and the hills of Wales.

Helperby.—About 18 months ago building operations commenced in the alterations and extensive additions to Helperby Hall, Yorkshire, for Mr. James Coates. The work is now completed. The building is in the Queen Anne style, and the addition on the ground floor consists of entrance hall, 28ft. by 20ft. At each side of the entrance lobby are alcoves with groined ceilings. The walls in hall are panelled in wood to a height of 7ft. 6in., and finished with a moulded impost. The works have been carried out from plans, &c., prepared by Mr. Charles E. Sayer, A.R.I.B.A., of 17, Soho-square, London. New stables and coach-houses are in course of erection, and are expected to be completed in a few months. Messrs. R. Leadley and Son are the contractors for the joiners' and carpenters' work, and the plumbing, plastering, and painting; Mr. E. Moorey, of Helperby, for the bricklayers' work; and Mr. R. Airton, of Harrogate, for the stonework. Mr. Jno. Hindmarch has acted as clerk of the works throughout. He was also clerk of works for the town hall and municipal buildings at Middlesbrough previous to commencing the above works.

Paddock Wood, Maidstone.—On Tuesday week the Archbishop of Canterbury visited Paddock Wood for the purpose of reopening the little parish-church of St. Andrew's, which has just undergone restoration. The work was entrusted to Mr. Martin, of Horsmonden, at a cost of £320. The flooring has been entirely renewed. A bed of concrete has been laid, upon which oak joists were laid on coigns on which the new floor rests. The match-boarding round the body of the church has been removed, and the walls plastered with a light-tinted stucco, while three new pointed windows have been let in on each side of the nave and filled with cathedral-tinted glass. The interstices in the open timber roof have been filled in with plaster. The heating apparatus has been extended, and a more powerful boiler laid down. The external stone work has been pointed, and defects in the tiled roof made good, while two windows have been placed in the porch, and a water table laid round the walls to carry off the surface water. Within the chancel the sanctuary within the rail has been raised and paved with encaustic tiles extending from a stone step.

CHIPS.

The parish church of Yarwell is about to be restored, at a cost of £800, from plans by Mr. J. C. Traylen.

The widow of the late Mr. J. T. Burgess, F.S.A., who was formerly a well-known contributor to this journal, has been appointed custodian and librarian of the Old Town Hall, Leicester.

An Amsterdam architect is restoring the small house at Zaandam, in Holland, which Peter the Great inhabited in 1692 for the purpose of learning the trade of a shipwright, and which is now the property of the Russian Government.

The Wesleyan Chapel at Little Sutton, near Rock Ferry, is being enlarged by the adition of transepts, a new front entrance porch, minister's vestry, two classrooms, a new schoolroom, vestibule, cellars for heating apparatus, &c. This will involve an outlay of £1,500. The architect is Mr. W. Allen, Sunbridge Chambers, Bradford-street. The contract is let to Messrs. Raffle and Campbell, Liverpool. The memorial stones have been laid this week.

A monument has been placed in the parish church of Tregaminion in memory of the late William Rashleigh, of Menavilly, M.P. for Fowey in the Unreformed Parliament. The monument is of white English alabaster, and of Jacobean character. It consists of a large shield of Elizabethan character, surrounded by drapery festoons, amongst which are sculptured the heads and wings of cherubs. Above the subscription is an ornamental shield, on which occur the arms of the Rashleighs. This memorial has been carried out by Mr. Harry Hems, Exeter.

Mr. George Barnard, landscape artist, who died last week, aged 83, was well-known for his water-colour pictures of Alpine scenery, and was one of the earliest members of the Alpine Club. He was drawing master at Rugby School for a great many years, and the author of many works of considerable utility to the student—"Foliage and Foreground Drawing," "Landscape Painting in Water-colours," "Drawing from Nature," and "Large Studies of Trees."

The Bishop of Chester visited Bramwell on Saturday afternoon for the purpose of consecrating the new mission church of St. Michael and All Angels. The new building is situated at the extreme end of the parish of St. Thomas, Stockport. The cost has been about £1,000, and the building will be used as a school. It has been built in the old "black-and-white" style peculiar to rural architecture in Cheshire.

The town council of Cheltenham adopted on Monday, after a long discussion, a report and scheme by Mr. Hall, the recently appointed borough surveyor, for preventing the disastrous floodings in the lower part of the town by deepening the bed and enlarging the waterway of the river Chelt, at an estimated cost of £3,551 5s.

The Lord Mayor will lay the foundation-stone of the new Fruit and Vegetable Market in Farringdon-street, about to be erected, on Wednesday week, the 22nd inst., from plans prepared in the City Architect's Office.

Workmen are engaged this week in pegging off the new line of light railway from Downpatrick to Ardglass. The making of the line will be commenced forthwith.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

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The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLI., XLIX., L., LI., LIII., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

J. W. (The load per foot we gave in the article referred to applies practically to the weight of the material of which the floor is composed, plus the moving load. The ordinary movable load on it would be very small. For a crowd of persons covering the floor 70lb. per foot has been considered sufficient; but this condition seldom exists in ordinary dwellings. The figures we give are for ordinary dead and moving weights on floors. For crowded floors the weight should be about 150 to 200lb. per square foot, as we state in the article. Hurst's 1½cwt. is intended to apply to crowds or warehouse floors, which is close to what we give.)—Mac. (There are various offices in connection with which such appointments are made—Her Majesty's Office of Works, the Woods and Forests, the various military and dockyard offices, and many departments of the Civil Service. It is impossible to answer specifically, but the most likely chance for you is to apply to the Civil Service Commissioners, Cannon-row, Westminster, for particulars of approaching examinations).

Received.—W. W. C.—H. B. and T. Co.—J. L. A.—B. of H.—H. A.—G. J. and Son.—C. H. R.—C. G. R.—T. T. and Co.—E. S. H.

Correspondence.

WHITEFIELD CHAPEL COMPETITION.

To the Editor of the Building News.

Sir,—I shall be glad if you will kindly allow me to contradict the statement in "A Competitor's" letter in last week's Building News.

If he will refer to Professor Smith's report again he will find that it is "Red Cross" and not "Lux Mundi" that exceeds the space shown on the site-plan issued with the instructions. At the same time he is right in principle, that all designs which exceed the limits of the site should be disqualified. This has come to be so generally understood that one is astonished that Professor Smith did not act on it. Competitors have nothing to do with whether the site-plan is correct or not—they have got to work to it, as there may be many reasons for the dimensions shown thereon.

All rules have exceptions, however, and had "Winged Heart" been unquestionably the best design one might willingly be disposed for art's sake to overlook any little discrepancies of that kind; but, on the contrary, any one who has

studied the designs and knows what he is looking at must admit that it has been fairly beaten on its merits, and seems to have been placed mainly owing to its supposed cheapness.

In his report Mr. Smith tells the committee what everybody has known all along, that it is "virtually impossible" to erect the buildings for the sum named in their instructions, and yet he has not the courage of his opinion to place the best design first, and leave the impossible money condition to be solved hereafter.

What hope is there for architecture as a fine art from such an award as his? Personally, I willingly make my acknowledgments for the high terms in which he speaks of "Lux Mundi"; but what is the good of all that to art, when it is put aside in favour of the cheap and commonplace? We have a right to look for a higher ideal than the encouragement of this kind of thing from a Professor of Architecture.—I am, &c., J. M. Brydon.

5, Cambridge-place, Regent's Park, N.W.
October 6.

Sir,—Referring to the criticisms of "A Competitor" in your last week's issue, allow me to say that I consider them sufficiently answered by Professor Roger Smith in his able report.—I am, &c., F. Boreham.

75, Finsbury-pavement, London, E.C., Oct. 7.

Sir,—After inspecting the drawings submitted in this competition, I can indorse the letter published last week by a competitor in every particular, except that instead of "Winged Heart" and "Lux Mundi" having occupied 6ft. more frontage than the plan of site issued to competitors shows, it is "*Winged Heart*" and "*Red Cross*" who show this encroachment in their plans upon the figured dimensions. This should be stated in fairness to "Lux Mundi," who, in common with the other eight competitors out of the ten, kept within the building line shown on the plan of site issued to competitors.

We, of course, assumed that this plan and the figures thereon were correct, and as there are no buildings, but unoccupied land, on either side of the site, we had no other data to refer to than the figured plans. This is no trifle in the report of the assessor to which we take exception, as you will readily see when I state clearly the actual facts. The body of the site is figured on the plan issued to competitors as 147ft. 6in. in depth, by 102ft. in width of frontage towards Tottenham Court-road. Both "Winged Heart," the first premiated design, and "Red Cross" show their buildings covering 108ft. frontage, or 6ft. more than the others, which, in a frontage of 102ft., represents an addition of one seventeenth in area to the whole site. I maintain that such a departure from the instructions should absolutely exclude these two designs from being premiated or adopted; if not, where is the use of a professional assessor? As any one acquainted with the difficulties of planning such complicated buildings in a very restricted area, which the assessor says "is only just large enough for the purpose; in fact, should there be any difficulty about securing unobstructed light over the adjoining land, it is not large enough," must know that 6ft. frontage by 147ft. 6in., or 885 superficial feet added to the site without authority gives a most unfair advantage over the other competitors. Again, I maintain that the assessor's report is inconsistent in excusing "Red Cross" and "Winged Heart," and giving the latter the first premium, when he points out as disqualifications that "Hearing and Seeing" "seems to encroach on adjoining land with steps and areas," and of "Spero," that "access is obtained on the south, and projecting steps are shown there. These and an access at the north from Whitefield-street appear to be outside the boundary of the building line shown on the plan. Its general arrangements no doubt are good, but they would be much curtailed if the projections were cut off within the boundary line."

"Hearing and Seeing" and "Spero" do, it is true, show steps and areas as described above; but surely they were justified in doing so, as one of the clauses in instructions runs thus:—"The portion coloured pink on block-plan represents the site to be occupied by new buildings, the whole area of which may be covered. The vacant ground on N. and S. sides may be deemed available for approaches to side entrances; but is not to be built upon." Even if steps are considered as buildings, these steps and areas would only occupy a very small portion indeed of the area allowed by the assessor to be actually covered by buildings in the designs of "Red Cross" and "Winged Heart" without any disqualification. In the face of this, I cannot accept the report as consistent or fair to those who have kept to the dimensions of site-plans and have written to the committee to that effect.—I am, &c.,

Another Competitor.

THE HOUSING OF THE WORKING-CLASSES ACT, 1890.

Sir,—An observant reader throughout of the clauses of the "Housing of the Working Classes Act, 1890," may note that not once does the word "architect" occur, and it is much to be regretted that no provision has been made with the view of compelling the public (whether complainants or proprietors of insanitary or dilapidated buildings) to employ suitable architects to confirm complaints or superintend such works as may be directed to be executed under the provisions of this valuable Act.

It is probable that many cases of severe hardship will occur by reason of the enforcement of the various clauses; yet it is quite beyond doubt that the result will greatly benefit the community generally, for if in any district four or more householders "living in or near to any street complain in writing to the medical officer of health of that district that any dwelling-house in or near that street is in a condition so dangerous or injurious to health as to be unfit for human habitation, he is required forthwith to inspect the same and to transmit to the local authority the complaint."

Neighbours' quarrels, and circumstances of a kindred nature, will sometimes lead up to unnecessary complaints being given, and it is in my opinion most certainly to be regretted that the clause should appear in this form, especially if it be remembered that, according to the Act, the absence of any such complaint will not excuse the medical officer concerned from inspecting any dwelling-house, and making a representation thereon to the local authority. Further than this, I consider that some protection against frivolous complaints might have been secured had there existed a clause insisting that all complaints should be backed by a member of the Royal Institute of Architects in addition to the four householders mentioned.

It is, I consider, further to be deplored that, in the initiative measure, the necessity for architectural aid is entirely ignored by the Act. The matters will be very much in the hands of the medical officer from the outset, and this, although the Act deals with dilapidated, as well as with otherwise insanitary buildings and areas; as the matter stands, building works will be entered upon without the aid of an architect (by reason of a supposed economy), and the compulsory employment of an architect in the case of proposed closing orders or subsequent works would have been a useful feature of the Act.

The Act fully provides for the legal enforcement of its clauses by all local authorities and county councils, and in case of necessity there is an appeal to the Local Government Board. Every local authority must cause to be made from time to time inspection of their district with a view to ascertain whether any dwelling-house therein is in a state so dangerous or injurious to health as to be unfit for human habitation, and power is given to forthwith take proceedings against the owner or occupier for closing the dwelling house, and any such proceedings may be taken for the express purpose of causing the dwelling-house to be closed, whether it be occupied or not, and upon such proceedings the court of summary jurisdiction may impose a penalty not exceeding twenty pounds, and make a closing order.

If, after a closing order has been made, the local authority should be of opinion that the dwelling-house has not been rendered fit for human habitation, and that the necessary steps are not being taken with all due diligence to render it so fit, and that the continuance of any building, being or being part of the dwelling-house, is dangerous or injurious to the health of the public, or of the inhabitants of the neighbouring dwelling-houses, then the local authority will order the *demolition* of the building.

In Part IV. Clause 75, the following occurs: "In any contract made after the 14th day of August, 1885, for letting for habitation by persons of the working classes a house or part of a house, there shall be implied a condition that the house is, at the commencement of the holding, in all respects fit for human habitation."

This retrospective clause, if thoroughly acted upon in connection with the rest of the Act, would probably clear the way to an extraordinary amount of work for builders throughout the country.—Yours faithfully,

George H. Bibby, F.R.I.B.A.

7th October, 1890.

"THERE'S WORK FOR ALL TO DO."

Sir,—As the architect referred to by "C. F. M." in your issues of the 19th September and October 3rd, and so crushingly criticised in your leader, I ask to be allowed to explain my views on the question of co-operation as applied to the profession or trade of building.

Looking at the whole subject broadly, the essential conditions for producing a thoroughly satisfactory building are, 1st, good designing; 2nd, sound workmanship; and 3rd, fair prices to both employer and employed. The first we will assume, but, given a good design, the next step is to get it carried out faithfully and honestly. To do this, it is first necessary to eliminate as far as possible all temptations to "scamp" the work. For the sake of argument we will assume that the architect is a man of honour, whose only aim is to do his duty to his employer. There are, of course, scamps in every profession, and no doubt it is perfectly easy for the architectural blackleg to cheat either on the usual or any other system. It is purely a question of personal character. The client will naturally intrust his work to a man in whose honour he has confidence, and must, like everyone else, suffer if he should happen to be disappointed. But, assuming this first point, there is no doubt but that the architect-builder has a far better chance of seeing his work honestly and faithfully carried out when the different craftsmen are engaged by him, and are under his direct control; nor will they do their work with less zeal when they find that, so far from being goaded into dishonest or indifferent workmanship by the eager avidity of the contractor to snatch an exorbitant profit or prevent a loss consequent upon his tender being below what honest work could be possibly done for, they are in every way encouraged to put forth their best efforts.

Nor would their zeal diminish when treated as co-operators with the architect in the work on which they are engaged, and when they share beyond their wages in the profits of their labour.

After all, it is only reverting to the ancient system. The old work was done in this way—the architect was the head, the men the hands of one and the same body, and no one was allowed to interfere with their direct co-operation. Hence much of the charm of the old work.

My reason for seceding from the Co-operative Builders was that I found, after practical experience, that I should be better able to carry out my views without being at the mercy of a committee.

I have, therefore, founded another scheme, known as "Hubbard's Profit-sharing Building Business," in which the interest of the men is maintained by an undertaking into which I have entered with them to equitably distribute one-half of the net profits of the business amongst them. The men are not shareholders, nor have they the rights or liabilities of partnership; but they are in every way encouraged to save and add to their profits, so that they may enjoy at the close of their lives the legitimate profits of their life's labour.

I inclose a copy of the rules, and am, &c.,

George Hubbard.

Sir,—In answer to "Pansa," I beg to say that it is the bricklayers and the carpenters who are the builders; the contractor is nothing but the profit-taker and sweater. Thomas Brassey very clearly shows this (though unintentionally) in a paper, "Co-operative Production," contributed to the *Contemporary Review*, Vol. XXIV.

Besides the saving to the employer, mentioned by "C. F. M.," by the direct association of the architect with the workmen, he is saved the contractor's profit, while such a comparatively small saving as the clerk of works' salary need not be mentioned. I quite see also, under this system, the great saving of trouble to the architect. He knows the men he has to deal with, while in general practice he never knows what duffer or scamp he may get hold of.

For those of your readers who have not an opportunity of referring to the volume (published in 1874) mentioned, I may say that the

"co-operation" Mr. Brassey speaks of for certain railway works was not co-operation at all. He says (page 223): "The whole of these works were executed by sub-contract. Some of the sub-contractors would take contracts for work costing in the total £15,000 to £20,000, and employing from 150 to 200 men. Frequently the sub-contractor would again let his work to the navvies at so much a yard."

Mr. Brassey says further: "When the work was organised in the manner described, the function of the principal contractor was rather that of a practical engineer superintending the execution of the works by a number of smaller contractors." And this is the point. I maintain that it was the work of the engineer himself to superintend the execution of the works.—I am, &c., CURRENTE CALAMO.

ASSOCIATION OF MUNICIPAL SANITARY ENGINEERS AND SURVEYORS.

SIR,—My attention has been called to a report of the proceedings of this association at Edinburgh in your issue of the 3rd inst., in which you have seriously misquoted what I said in the discussion which followed Mr. Cooper's paper. In your report, I am supposed to have said that the Liverpool Corporation were endeavouring to sell the blocks of artisans' dwellings they have erected, as they had failed in their requirements; whereas what I did say was that the corporation were now endeavouring to sell the land from which the "rookeries" had been cleared at a very low price, in order to induce persons to build suitable dwellings for the poor upon it.

The artisans' dwellings erected by the Corporation of Liverpool are models of their kind, and I am quite sure you will correct the misrepresentation contained in your last issue.—I am, &c.,

H. PERCY BOULNOIS, M.Inst.C.E.,
City Engineer, Liverpool, Oct. 6.

ZINC IN CONTACT WITH BRICKWORK.

SIR,—Allow me to corroborate the statement in Messrs. A. and C. Harston's letter (in your issue of Oct. 3), respecting the effect alleged to be produced in zinc through its contact with brickwork, as in the case of flashings, &c. I can speak from a practical experience of 30 years, and I have never found that zinc has suffered in any way from such contact. In fact, generally, when stripping a roof, I have found the flashings the best preserved. A strip of felt between, as suggested by your German contemporary, except, perhaps, where the flat brickwork is to be covered, and that merely to secure a level surface, I hold to be useless. Careful pointing with cement to secure perfect dryness is, in my opinion, all that is necessary.—I am, &c.,

J. S. RAINER.
(Pro Holden and Co.)

The Bishop of St. Alban's has just consecrated the new church of St. Thomas, West Ham. The church was designed by Mr. J. Oldrid Scott, and consists of a nave and one aisle, and seats 500 people. It was illustrated in our issue of Nov. 13, 1885.

The new infirmary at Hurstpierpoint College, built from the designs of Messrs. Carpenter and Ingelow, was opened on Thursday, the 2nd inst. The cost has been about £1,200.

At Monday's meeting of the Yeovil Corporation, a letter was read from Mr. R. Vining relinquishing the office he had held for 30 years as borough surveyor, and thanking the council for appointing him as consulting surveyor, at a salary of £100 a year for five years. He promised to do all he possibly could to assist the new surveyor, who commenced his duties on the 1st inst.

Mr. Ebenezer Timmins, engineer and ironfounder, of Mill House, Runcorn, died at his residence on Sunday at the age of 67 years. He was engineer to the Runcorn Waterworks, and had acquired a reputation throughout the kingdom as a sinker of wells.

The terms of an agreement for the erection by the Great North of Scotland Company of a new passenger station at Rosemount Viaduct, and a turntable on the north side of Union Bridge, were adopted by the Town Council of Aberdeen on Monday. The new station will consist of a building two stories in height, and be erected between Rosemount Viaduct and the Woolmanhill Tunnel. The price paid by the railway company for the land is £1,252 14s. 9d., and the work has to be completed by 1st January, 1892.

Intercommunication.

QUESTIONS.

[10398.]—**St. Giles' Cathedral, Edinburgh.**—Will one of our Northern readers send a sketch of the recently-discovered window in St. Giles', Edinburgh, as it is evidently one of the few Perpendicular details in Scotland; also if Burn, in his restoration, copied in the present traceries at all what he found pre-existing?—OS HUMERUS.

[10399.]—**Setting Kitcheners.**—What are the requirements necessary in setting a kitchener? Cannot a pipe be carried up from boiler to heat a coil over, or is it necessary to have a special boiler for this purpose? Shall be glad with information.—THOMAS.

[10400.]—**Weather Bar.**—Which is the best form of a weather bar for casement to a school-room subject to driving rains, and how should it be fixed?—SURREY.

[10401.]—**Church Decoration.**—Any suggestions on decorating a small church now simply plastered will be received with thanks. There is a chancel divided from nave by an arch, an open-timbered roof, one end gallery. The scheme must be inexpensive, and consist mainly of toning the walls; relieving by appropriate stencilling, or otherwise, the chancel; and putting a dado round the nave. —M. A.

[10402.]—**R.I.B.A. Exam.**—Will Mr. G. A. T. Middleton, or some other reader, let me know the following:—In the Preliminary Exam. for the above I note that drawings are to be sent, with certificate, for exemption from the exam. I saw Mr. Middleton's answer some time since respecting freehand drawing. What would be a good subject for geometrical drawing, as I am anxious to know?—X. Y. Z.

[10403.]—**Strength of Pipes.**—What is the rule for pipes which have to convey water at a considerable pressure? An easy rule would oblige.—L.

[10404.]—**Rise of Water in Basement.**—Can anything be done to prevent a basement room being flooded after a heavy rainfall? The soil is clay. Cannot the wood floor be substituted by an asphalte or cement surface? Answers will be gladly received.—A TENANT.

[10405.]—**Levelling.**—Are there any improvements in instruments for levelling, and which is the best level for ordinary purposes?—SURVEYING STUDENT.

[10406.]—**Sash Fastening.**—I want to specify a really good fastener. Is there not a special kind for houses of a superior make that will not easily get clogged up? The springs of the ordinary fastener are a great objection, as they are continually getting loose, and are readily broken.—A. Z.

[10407.]—**R.I.B.A. Exam.**—Will some of your readers kindly give me some information under the following circumstances?—Twelve months ago I entered for the Preliminary Exam., in ignorance of the restriction that two years have to elapse between each successive exam., which means at least four years before I can enter for the final, as I have been relegated in the Preliminary for one subject—viz., French—and as I am now old enough to take the final, I should like to know if I can do so without taking the Preliminary over again and then waiting the stated time for the intermediate and final.—ANXIOUS.

[10408.]—**Party Fence Wall.**—It is proposed to take down a portion of a garden division wall (within the radius of the Metropolitan Building Act) and rebuild in the same position to a greater height, to form a side of a proposed building. Must a party-wall notice be served on adjoining owner, or can the work be done if he objects? If some experienced readers will kindly say what can be legally done, it will greatly oblige.—DOUBTFUL.

REPLIES.

[10394.]—**Solid Wood Floors.**—I should certainly recommend flooring boards to be nailed to fillets fixed in the coke breeze concrete, so that there may be an air-space between the latter and the flooring boards, as in W. Lindsay's method. The "Acme Board Flooring Co." has a layer of cement under the boards, which are laid on some composition. For solid and durable floors, the solid wood block is certainly to be preferred, as no moisture can then find its way under the wood.—G. H. G.

The bust of Eugène Delacroix, the painter, by M. Dalou, was unveiled in the Luxembourg Gardens, at Paris, on Sunday.

The Rev. Trevor Owen, Vicar of Trevor, is conducting a series of excavations at the Cistercian Abbey of Valle Crucis, near Llangollen. Whilst excavating along the north of the ruin, Mr. Owen has recovered the tombstone of a Knight Templar, beneath which were a few decayed bones. In completing the excavations along the west front of the abbey, the base of a spiral staircase was also discovered. Many pieces of molten lead, iron, charred wood, and stone have been discovered, demonstrating that the original abbey was destroyed by fire.

The Birmingham City Council decided on Wednesday to consult Mr. James Mansergh, C.E., with reference to the desirability of seeking Parliamentary powers for an extension of the water supply. It happens that the firm of Lawson and Mansergh, of which he was a member, were associated with Sir Robert Rawlinson, C.B., in the inquiry he made in 1871, under instructions from the town council, on the whole subject of the water supply of Birmingham. Extensive alterations and additions have, it was also reported, been carried out at the Aston pumping-station at a cost of £5,000, under the direction of Mr. Gray, the water engineer to the corporation.

LEGAL INTELLIGENCE.

RE W. L. KELLAWAY.—Under the failure of William Lemon Kellaway, White Lion-street, and Penton-grove, Pentonville, builder and contractor, a statement of affairs has been furnished, showing total liabilities £32,944, of which £29,532 are fully secured, and £3,148 expected to rank, with assets estimated to realise £676, after providing for preferential payments. The debtor commenced business in 1881 with about £500 capital, his contracts consisting principally of the erection of artisans' dwellings. He attributes his failure to his inability to realise or obtain further advances on mortgage property in Duffering-street, St. Luke's, and to losses on contracts.—The debtor has intimated that it is not his intention to make a proposal.

CHIPS.

The widening of the quay at Weymouth, which has been in progress for the past two years, is now almost completed, and the plant and machinery are being removed. The contract has been carried out by Mr. Saunders.

The town council of Halifax have invited competitive plans from architects practising in the borough for new baths to be erected on the Woodside Estate.

Mr. H. H. H. Horsley, the oldest artist in the Midlands, died on Friday last at the age of 84. Mr. Horsley was the senior member of the Royal Birmingham Society of Artists, having been elected to that body in 1833, and having remained a member ever since. He practised his art—first as a portrait painter and later as a landscape painter—with much assiduity during the long period above mentioned, and it is a striking testimony to his vigour that the present exhibition of the Birmingham Society of Artists contains some of his pictures.

The organ in the parish church of Winchcombe, which was built in 1782 and enlarged in 1844, has just been reconstructed and received further additions, the present works having been carried out by Messrs. Bishop and Son, of Marylebone-road, N.W. Side-wings, matching the old work, have also been added to the case. The reopening took place on Wednesday week.

The civil action for damages by Messrs. Monk and Newell, contractors, against the Corporation of Liverpool in connection with the Mersey aqueduct crossing, adds to the gravity of the position of the Vyrnwy scheme. The damages claimed amount to £28,000, and the case will probably be heard before Christmas in the Court of Queen's Bench, London. A counter-claim by the Corporation will probably be made, but it is stated that this does not nearly amount to the sum above named.

Owing to the increase in the population of the parish of St. Botolph, Lincoln, an additional church is to be built. Plans have already been prepared by Mr. William Scorer, architect, of Lincoln, the church being designed to accommodate 487 worshippers. The cost is estimated at £2,876.

The Bovril Company, Bath-street, City-road, were summoned to the Clerkenwell Police-court on Friday, for having caused a sky sign to be erected above their premises in such a manner as to be a source of danger to the public. Evidence was given that the letter B projected over the thoroughfare, and that the sign was 152ft. above the pavement. For the defence, Mr. George Sage, the constructor of the sign, said special precautions had been taken, and there was no danger. The magistrate imposed a fine of forty shillings. Notice of appeal was given.

A new studio will be opened at King's College on Monday next, the 13th inst., under the auspices of the Worshipful Company of Carpenters, for wood-carving classes. Particulars may be had of the clerk to the company, Carpenters' Hall.

On the opening day of Professor Banister Fletcher's Classes in Architecture at King's College, 102 students attended—a gratifying commencement of the new courses. The third-year students do not commence work till to-day (Friday.)

The necessary funds for purchasing the fields proposed to be added to Peckham Rye—£50,925, having been obtained, it is expected that the extension will be opened early next year by the County Council. A final £5,000 is, however, required to extinguish the leaseholds of certain houses that disfigure the ground, and the freeholds of which have been purchased.

The soundings made by French engineers on this side the English Channel in connection with the proposed Channel Bridge are now completed. The results of the survey are reported to be less satisfactory than was hoped, the floor of the Channel between Folkestone and the Varne being somewhat unfavourable to the project. Another route is, therefore, contemplated, probably between the nearest land points—namely, Cape Grisnez and Dover.

Our Office Table.

Mr. Alfred Waterhouse, R.A., in an article jointly contributed by him with Mr. H. Lawson, M.P., to the *New Review* on "Street Improvements in London," repeats his suggestion advocating the creation of a council of taste nominated by the Government to look after new streets and buildings in the metropolis. He writes: "Such a council has been in existence in Paris for upwards of two centuries, and has done its work effectively and at little cost to the public, which has thus had the advantage of the very best advice on matters of public taste from men whose fitness for the task, ability, character, and impartiality are unimpeachable, and who consider this office of the highest distinction and honour. Such a tribunal might report its recommendations to the County Council or the Board of Works, and if the representations were received with the attention they would deserve, they would not only save us from much annoyance and humiliation which, as a people of taste, we are now subjected to, but would conduce greatly by well-timed advice to the beauty and attraction of the metropolis."

"The Architecture of the Renaissance in England" is the title of a book about to be issued in six parts by Mr. B. T. Batsford, in illustration of a series of historic mansions and other buildings erected in this country between years 1560 and 1630, with descriptive letterpress notes by Mr. J. A. Gotch, F.R.I.B.A., assisted by Mr. W. Talbot Brown, A.R.I.B.A.. The programme includes Hardwick Hall, Hatfield; Kirby, Blickling, Cobham, Burghley, and other large houses as well as less important ones, such as Ragdale, Humbleton, Condover, Brereton, Lilford, and others. The illustrations will be chiefly photo-lithographic or "Lichtdruck" reproductions of photographs taken for the work under the direction of the authors, who have drawn besides some twenty plates of measured drawings, making in all about 124 plates for the entire book. Small sketches will be interspersed with the text. The first part is announced to appear this month.

One of the features of Newcastle-on-Tyne is the absence of direct means of communication between the chief points in the city and the roundabout and inconvenient routes that have consequently to be traversed between the chief points. Mr. J. J. Lish, of that city, past-president of the Society of Architects, has devised a scheme of street improvement which appears to remedy this evil, and to provide excellent sites for business premises at an outlay not unreasonably great when the advantages to be secured thereby are considered. Mr. Lish's scheme of improvement has as its leading feature an almost straight line of thoroughfare running east and west from Heaton to Elswick-road, with a branch off to Stanhope-street. He suggests as a site for the projected new Town-hall, a triangular central position facing the broad Haymarket, just where Percy-street and a proposed extension of Grange-street diverge from that leading thoroughfare, while behind it in Percy-street, and separated from the town hall by a short street, would be the new Assize Courts. Under an alternative scheme, the town hall is placed one block further south, facing Grey's Monument in Blackett-street and Grainger-street; but if the suggested improvements were carried out, the Haymarket site would become the natural centre of the city, and therefore the preferable position for its municipal buildings.

A committee of the town council of Birmingham reported on Thursday to that body that they have expended the sum of £2,000 in commencing a collection of water-colour drawings in the belief that a nucleus will speedily be supplemented by gifts and bequests. The works purchased with this sum were:—A water-colour drawing, by Walter J. Langley, R.I., of "A Fisherman's Widow"; "A Cumberland Lake Scene," by J. B. Pyne; a water-colour drawing, by J. Henry Henshall, R.W.S., "In Wonderland"; a water-colour landscape drawing, by Thomas Collier, R.I.; and a water-colour drawing by R. P. Bonnington. They have also bought some examples of Indian textile fabrics, antique lace, and ironwork. The amount expended by the committee to date is £12,083 7s. 3d., making, with £2,500 appropriated to unexecuted commissions, a total of £14,583 7s. 3d., of which sum £6,448 5s. has been devoted to the purchase of paintings, and £8,135 2s. 3d. to industrial art.

A special committee of the Glasgow Town Council appointed to fill the vacancy caused by the recent death of Mr. John Carrick, the Glasgow master of works, has recommended that the office be divided, and that Mr. John Whyte be appointed master of works, assessor to the Dean of Guild Court, and superintendent of streets and sewers, and that Mr. A. B. M'Donald be appointed burgh surveyor and engineer, and head of the architectural department, both gentlemen having been for some time in the employment of the corporation. All architectural work of an important character is to be in future given to outside architects.

The death is announced, in his 88th year, of Mr. Henry Courtney Selous, for years an exhibitor at the Royal Academy. He was a student at the Academy School, gained the silver medal for drawing from life when very young, and painted and exhibited his first picture at the age of 14. Before he was 20 he took two gold and two silver medals from the Society of Arts, and was elected a member of the New York Academy. He was principal painter of Barker's, afterwards Burford's, panoramas for 35 years, during which time he gained prizes in numerous competitions for original drawings. His best-known works were his two large pictures of Jerusalem, Ancient and Modern, and a painting of the opening of the Great Exhibition of 1851, which is now in the South Kensington Museum. His fresco of Alfred the Great at the Law Institute in Chancery-lane has been described as the only modern example of genuine fresco.

The annual meeting of the Association of Sanitary Inspectors of Great Britain was held on Saturday evening in Carpenters' Hall, London Wall; Mr. Hugh Alexander (chairman of council) presiding. In the annual report a warm tribute was paid to the memory of the late Sir Edwin Chadwick, K.C.B., ex-president of the association. During the past session of Parliament, it was said, there had been a continued block of business, excluding measures of sanitary reform recognised as necessary to make sanitary inspection more beneficial to the public health. The report called attention to the necessity for a statutory definition of the qualifications for sanitary inspectors, tenure of office, duties, and salaries, and declared that the conditions under which at present sanitary inspectors discharged their duties were inimical to the interests of public health. The report was adopted, and Mr. Alexander was re-elected chairman of the council.

A new board school in Ditchling-road, Brighton, erected at a cost of £13,250, was opened by the Mayor on Friday.

The Great Eastern Railway Company have presented the remains of the mansion of Sir Paul Pindar, which they are removing from Bishopsgate-street, under their terminus-widening scheme, to the South Kensington Museum.

The ceremony of laying the foundation stone of the new church of St. Augustine, Newland, Hull, was performed on Tuesday. The plans have been prepared by Mr. Gilbert Scott for a building in the Late Flamboyant style, with nave, and a single aisle, a wide one on the north side, to be built of brick, with stone facings. The estimated cost is £3,900.

Plans by Mr. Sydney Mitchell, of Edinburgh, for a nurses' home to be added to the Royal Infirmary of that city have, after considerable discussion between the Infirmary Committee and the Dean of Guild Court, been finally approved. Objections were raised by the Court that the new pavilion would tend to shut in the air coming to the Infirmary, but it was pointed out that the accommodation was urgently needed, and that as full provision for air and ventilation as possible has been made.

The Devon and Cornwall Banking Co.'s new branch premises at Dawlish, erected by Messrs. H. Webber and Co., contractors, Paignton, after designs by Mr. G. S. Bridgman, M.S.A., Torquay and Paignton, were opened on Monday. The bank occupies the site of an old beach house adjoining Brookdale-terrace, and as the new premises were by arrangement set back about 8ft. from the line of the old cottages at the bottom of Teignmouth-hill, the thoroughfare was opened up. The elevations are three stories high. The basement and ground floor front is of limestone, and the upper portion is of Chudleigh limestone, while the whole of the dressings and cornices are of Ham-hill stone.

MEETINGS FOR THE ENSUING WEEK.

Friday.—Architectural Association. Address by the President, Leonard Stokes. 7.30 p.m.

CHIPS.

At Stirling-road Wesleyan Chapel, Birmingham, on Tuesday, the new lecture-room, which has recently been erected from the designs of Mr. E. Harper, the architect of the adjoining chapel, was opened. The room is a structure of one story.

The Works Committee of Edinburgh Water Trust have unanimously agreed to appoint Mr. Mansergh, C.E., London, to act along with Messrs. Hill and Gale, engineers, in the remit recently made to them in reference to the question of procuring an additional water supply for the district.

The Royal Manchester Theatre in Irlam-road, Bootle, near Liverpool, was opened on Monday night. The builders were Messrs. H., J., and C. Pennington, of Liverpool.

The Lyceum in Bold-street, Liverpool, was re-opened on Thursday in last week, after extensive alterations and requirements, carried out by Messrs. Brown and Backhouse, from plans and under the superintendence of Mr. Robert Wylde, architect, of Lord-street, Liverpool.

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MR. H. T. A

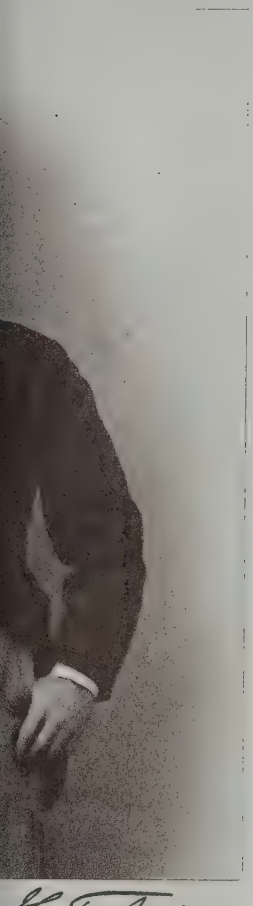


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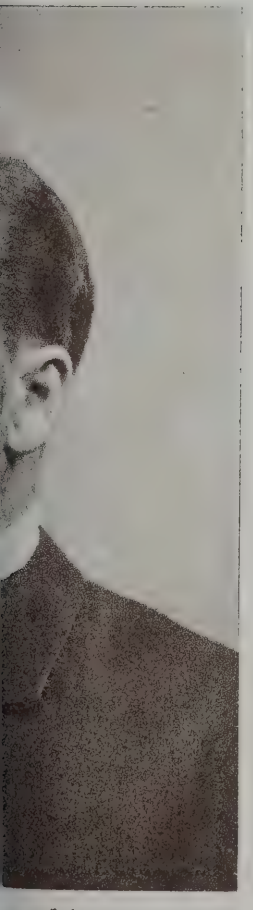
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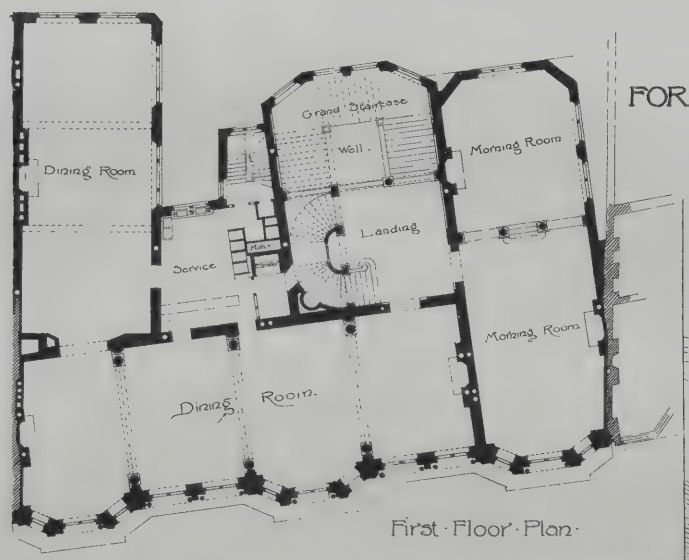
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First Floor Plan.



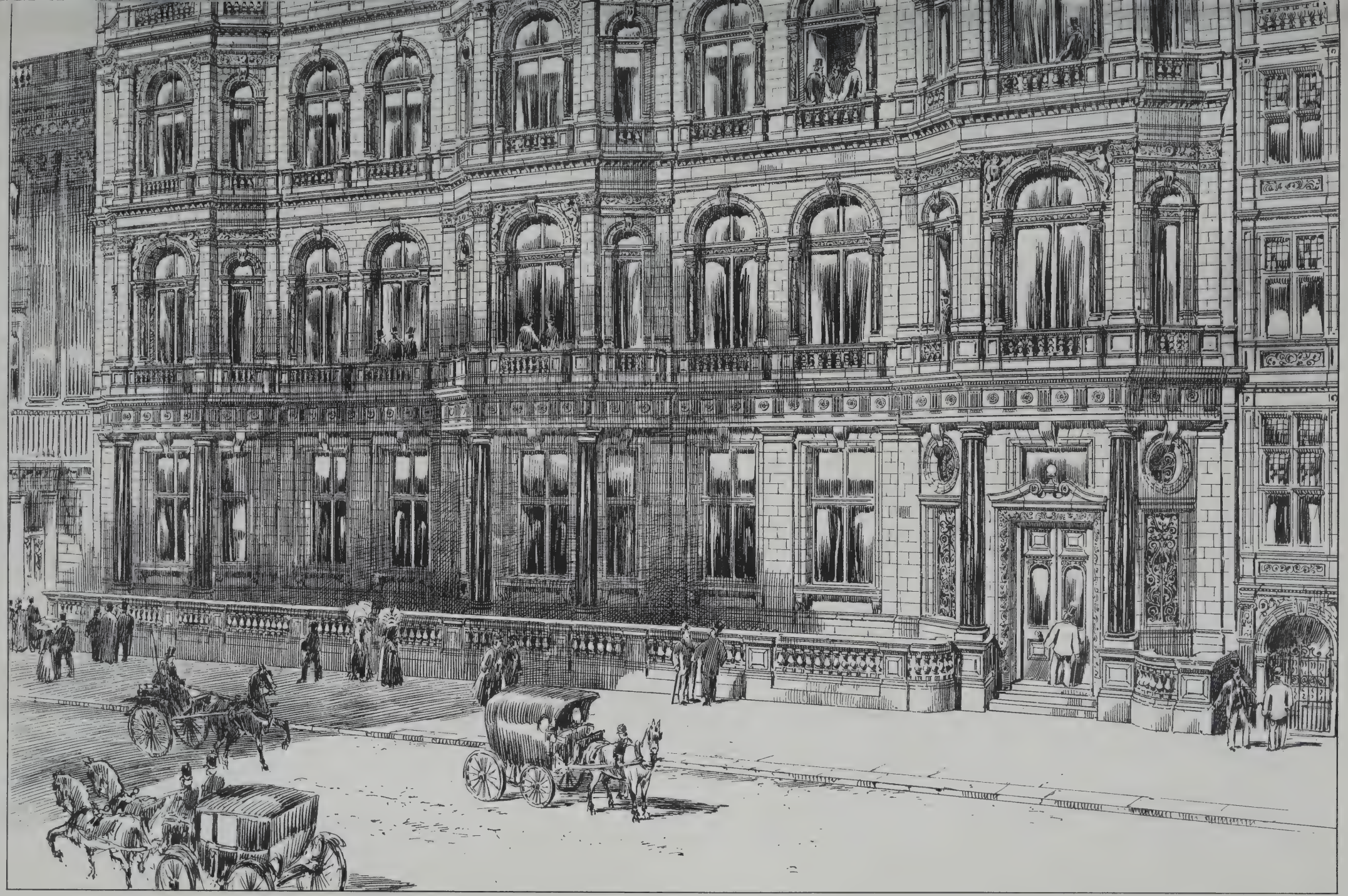
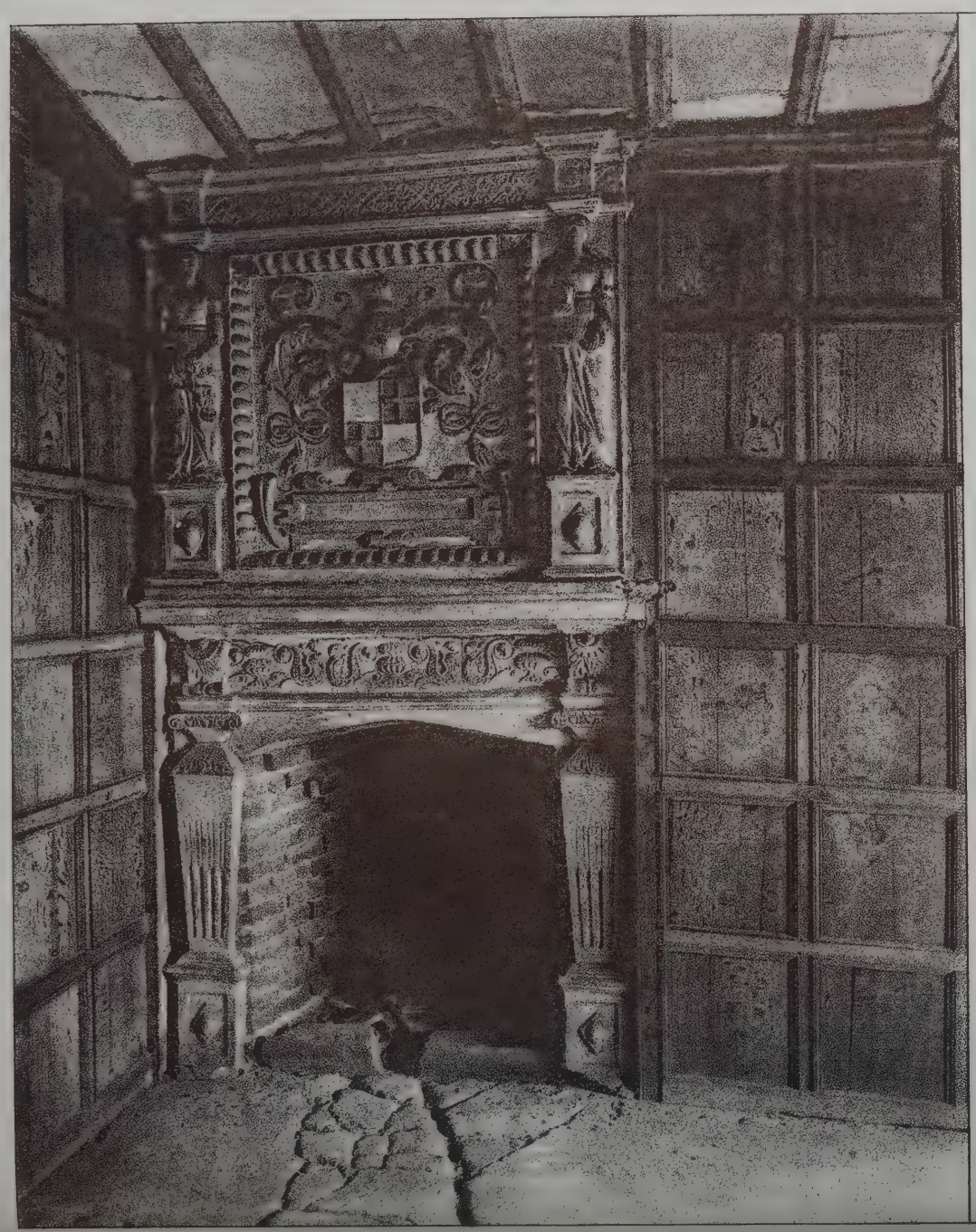


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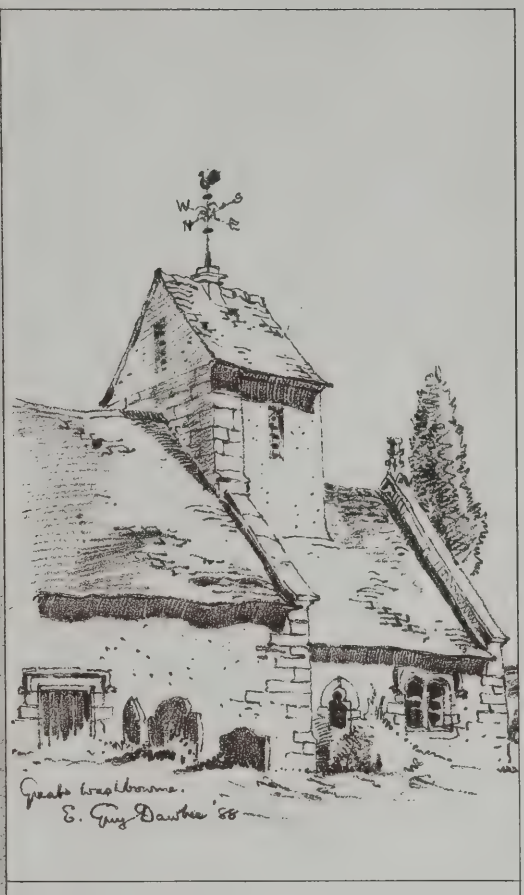


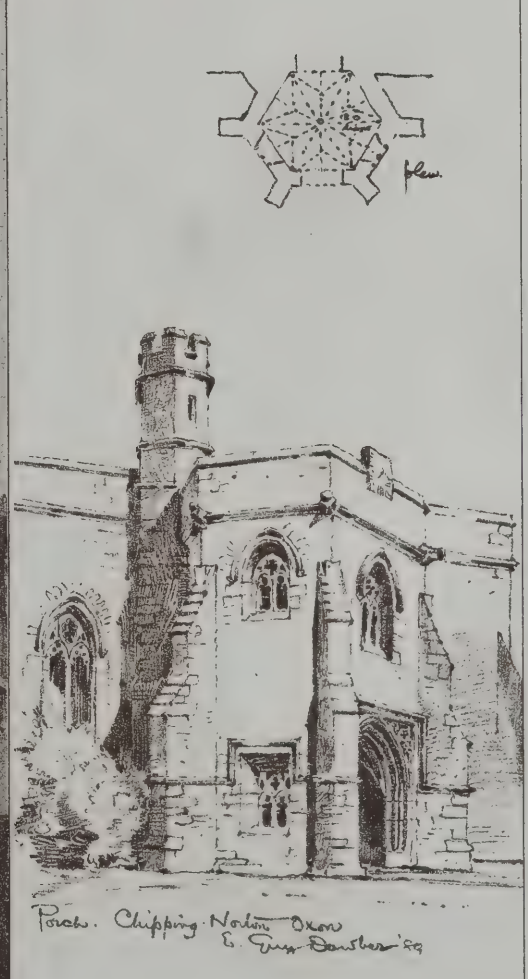
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A SHEET OF OLD CHURCHES—SKETCHED BY E. GUY DAWBER

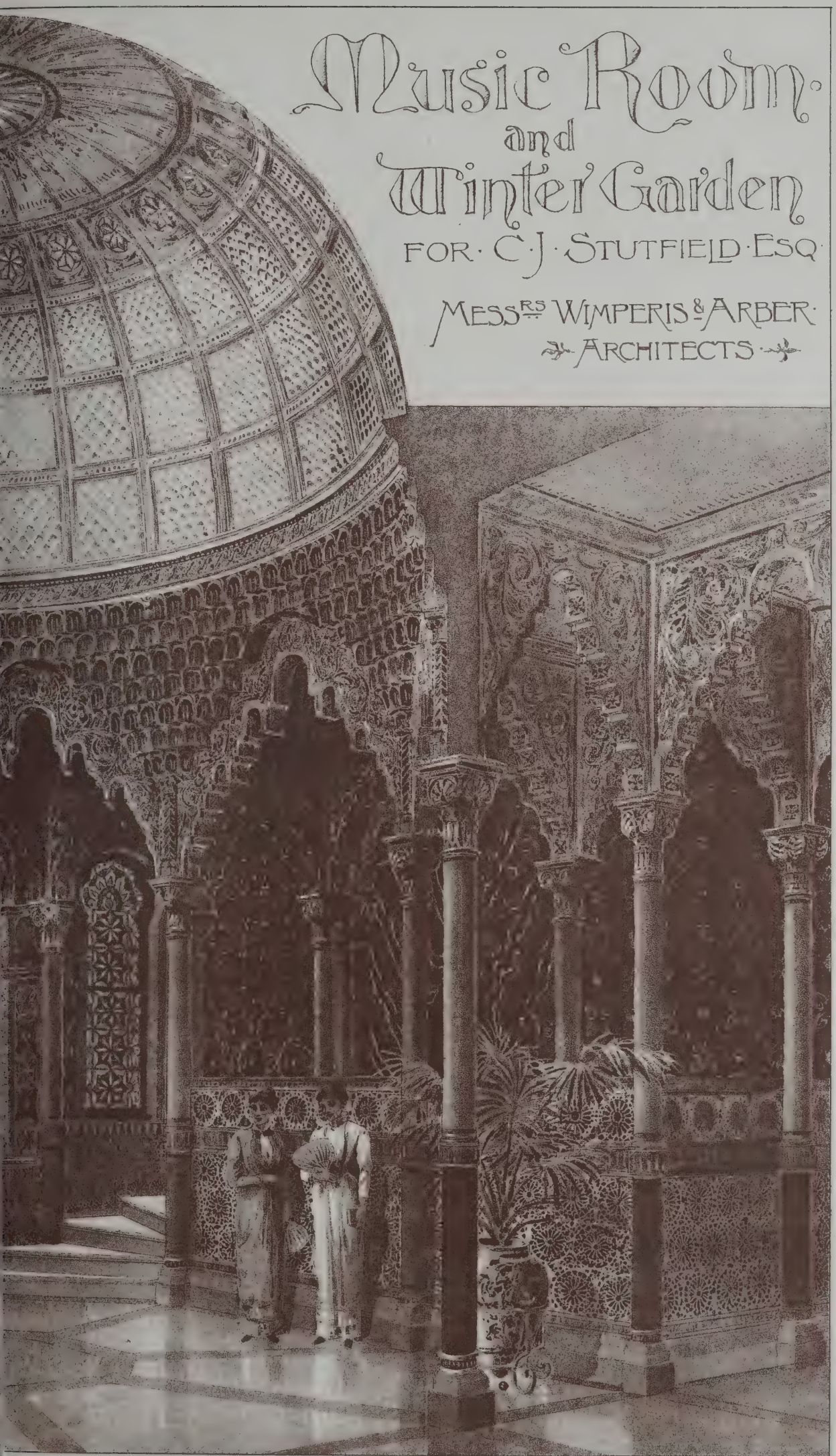
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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LIX.—No. 1867.

FRIDAY, OCTOBER 17, 1890.

CONGREGATIONAL BUILDINGS.

PROBABLY the highest function of the art of architecture is that concerned with the design of buildings intended for religious worship. At least, the most typical examples of the art are those connected with the temples of Paganism and of Christianity. The noblest art has been found associated with the temple and the sepulchral monument. Though in these days the profession have to consider various forms of structure for purposes that did not exist in the earlier ages, yet the requirements of buildings for public worship and preaching still call into exercise skill of no mean order, and lead to the erection of structures that display the more prominent and persuasive qualities of art. An architect well equipped for his profession cannot now be content to know the history and growth of church-building in England, or how to satisfy the requirements of the opposite schools of thought in the Anglican church, congregations that prefer a traditional ritual or one of primitive simplicity; but he must be prepared to solve the more difficult problem of arranging buildings to suit various Nonconformist sects, in which a large congregation can be seated within hearing and sight of the preacher. Between these two modes of design a very essential difference is implied in mind and feeling. The traditional type, with its historic growth of forms, appeals to one class of architectural minds; the other is a problem for which precedents are few, hence it is more difficult and is only mastered by those who can resolutely set aside all previously conceived ideas. With the one the doctrinal idea of a building in which the Sacrament is prominent, involves the basilican type of church having a chancel or apse of large size to which everything else is subordinate: one that lends itself to picturesque arrangements, but is equally unsuited for a congregation whose main object is to hear a preacher and to partake in congregational singing. This unsuitability of the older type is seen more conspicuously in many of our cathedral churches, where a second pulpit is often set up westward of the choir-screen for the better hearing of large congregations which now frequent them. The long church with its triple division into avenues was the natural outcome of a liturgy in which processions form an important part of the service as in the Roman and Anglo-Catholic rituals; it is, indeed, this point of length, compared with breadth, which differentiates the two types of building. The distinction has at last been recognised, after a long period during which many Nonconformist buildings were erected to imitate the older church plan. Architects are now grasping the problem of how best to provide for large congregations in restricted areas. Considerable advances have been made of recent years; but there is still much room for improvement, especially in the direction of architecturalising the interior. Though ingenious plans have been adopted, not many architects have succeeded in giving them an external form. Amongst those who have laboured most successfully in giving a character to the architecture, we must mention Mr. Jas. Cubitt, whose able work on "Churches for Congregations" is well known to many of our readers. Since the publication of this work many very clever buildings have been erected, based on the Greek cross and the central-hall principles. The square and octagon forms combined have furnished some of the more important of these plans. Of the latter class are the polygonal churches and baptisteries, as those of St. Vitale, Ravenna, and St. Lorenzo, Milan—the former remarkable for the manner in which an octagon arcade is domed over with a surrounding aisle.

The plan of the congregational type of building has generally been a rectangle, with a recess at one end for the platform. Sometimes we see it broken by slight transepts, more for the sake of appearance, and often we find a tower added as a porch to the west end or on one side. The architects have sought refuge in imitation of the traditional church for external appearance, while contenting themselves with various expedients internally to assist the acoustics and to reduce the space occupied by pillars and arcades to the minimum. The endeavour has been to give an external church-like effect, while bringing the interior to the condition of a large preaching hall unimpeded by columns. This compromise, we know, is beset by difficulties; it has never been satisfactorily solved, for the sufficient reason that the avenue or arcaded church was the outgrowth of a plan arranged for a special purpose, and to make it perfect the arcade should be prominent and pronounced. On this rock early Nonconformist architects came to grief. Trying to avoid the arcade and its piers, the whole design became a subterfuge—a subversion of the original idea. Our readers know the various attempts made to retain the arcade, while endeavouring to reduce its substance to a minimum. Two ideas presented themselves, and these have been worked upon ever since: the first is to substitute iron for the stone pillar, the second to reduce the number of arches or bays. The result of this attenuation was to rob the interior of all character and meaning, and to produce a feeble and meagre imitation. The equal-armed cross has been tried with better success. The pillar difficulty was wholly or partly met; the transepts being short, have two roofs intersecting in the centre, the latter sometimes carried up as a dome or lantern. This plan enables the pulpit to command the whole congregation, especially if it is brought into the church in a line with two of the opposite transepts. Or a plain, square building having four piers within forming a cruciform arrangement of roof, gives a large unimpeded area, as the four corners taken out of the Greek cross plan are, in this plan, thrown into the church, a principle on which we have a few very ingenious and highly-effective interiors by Wren, notably in some City churches. St. Stephen's, Wallbrook, shows a rectangle of about 3 to 2, subdivided by columns carrying over half the area a dome with clerestory, a celebrated instance of roofing over a large area architecturally; though, curiously, it has been very little taken advantage of by architects who desire a large area. The Temple Church is a 13th-century example of a circular nave attached to a rectangular choir; the acoustical properties are excellent. One of the first experiments made in this direction in the construction of a church was at Harlesden in 1887. Mr. E. J. Tarver designed a church in which a large octagon, joined to a short rectangle at the west end, formed the plan. The octagonal part, which was covered in by intersecting roofs, forming internally an octagonal lantern with flèche over, was about 60ft. in diameter, and a small recess was made for the altar at the east end. The junction of octagon with a rectangle divided into nave and side aisles was not, however, a very happy expedient. The seats were arranged over the entire area of the octagon or in straight blocks. A more successful attempt was made at the Union Chapel, Islington, in which a square is converted into an octagon by four isolated piers arcaded above, the four other piers being engaged to the walls of recesses. The piers only obstruct about six sittings out of the whole 1,600. A lofty lantern roof, ingeniously contrived by the architect, Mr. Jas. Cubitt, crowns the octagonal area, the side aisles outside the octagon being roofed up to the octagonal arcading which carries the lantern. A view of this chapel we published on March 29th, 1878. The particular point of this design is that it is an attempt to produce an architectural treatment of a galleried central hall for preaching. Another well-known example of the octagonal plan is that of Christ Church, in the Westminster Bridge-road, designed for a large congregation under Mr. Newman Hall. Other instances of congregational churches planned on the central-hall principle, may be cited to show what has been done towards the solution of the problem. They all present us with a more rational basis for congregational worship than the "avenue" plan, while acoustically those we have mentioned have been found to give good results. The recent competition for the Whitefield Memorial Chapel, noticed by us last week, afforded architects another opportunity of displaying their invention in buildings of this character. We might have expected a distinct development of the problem, though only two of the designs indicate any satisfactory attempt to render a large congregational area architectural. It is singular to remark, as showing the still uncertain state of the architectural mind on the subject, and the tentative efforts made, that the larger number of competitors adopt the rectangle with the old arrangement of side aisles and recesses as in the case of the selected design. Other designs show the rectangle placed transversely to the axis of the platform, with seats semicircularly disposed round it—a plan well suited for a lecture theatre for a hospital, but not certainly one that can lend itself to any architectural effect either externally or internally. These very opposite principles of planning conclusively indicate the absence of any argeement as to the conditions of congregational church planning, and show that architects have still very imperfect ideas of acoustical arrangements. To instance the question of seating: the selected plan has the blocks of seats planned in straight rectangular lines, with three parallel passages on the old system; others have made the centre passages radiate towards the pulpit, with the seats as tangents to the radii of sight; a third class show the seats arranged in arcs of circles struck from the platform as a focus, and this arrangement has been adopted by those who have taken the lecture-theatre type. No doubt there is a scientific fitness in the circular seating plan, as the waves of sound are propagated in circles; but it does not follow that the circular arrangement is therefore better to assist the hearing, while on architectural grounds the rectilinear plan, as that first mentioned, is more in keeping with structural lines, and of course is less costly in construction. The question of the position of platform and pulpit is another point about which architects have very conflicting views. In some places we find the pulpit placed against a flat wall or in a recess; while in others it is advanced into the body of the church. To give an initial force to the voice and to confine it within a small space at first has led theorists to suggest a trumpet-shaped section to the building, which is contrary to the position assigned in the latter. Under a lofty roof, assistance is required by the aid of a sounding-board to prevent a too rapid transmission vertically of the waves of sound.

The gallery has always been the bugbear of the church architect. In some of the Rhenish churches the gallery has been treated in a sensible structural manner, and made to form a part of the fabric. At the fine church of St. Augustine, Kilburn, following these

models, it is formed in the thickness of the wall or arranged between internal buttresses, which are pierced by arches to form, below an aisle and above a gallery. Why should the Nonconformist architect restrict himself to that very miserable and intensely ugly arrangement of a sloping platform of seats resting on a few niggardly posts of iron? Why should he still desire the circular gallery front at the end opposite the pulpit, which looks to rest on nothing? These are questions which, however difficult they appear, owing to the necessity of gallery accommodation in town churches, are worthy of more attention and study. Of course, the main difficulty is the column obstacle again. A great deal can be accomplished by placing the galleries in recesses or transepts outside the central hall, or continuing them upwards to carry a clerestory. The arcade and clerestory are features that cannot be altogether ignored even on this system if an architectural interior is to be attained. In the beautiful little church given by Agincourt of Sta. Fosca, Torcello, we have a germ of what a congregational building may be where a dome springs from eight columns placed within a broken square with recesses on each side.

PROPORTION.

THE whole secret of design in architecture may be summed up in the terms Proportion and Expression, for the differences which mark off one style from another are those mainly derived from the form and proportion of the openings. Professor Banister Fletcher, in his opening address to students of architecture at King's College, very appropriately alluded to the subject of proportion, which he illustrated by taking the openings of Somerset House, and by showing by model the effect of first a doorway of half its width in height, next making it a square opening, then adding one third of the width to the height, and, lastly, making the height twice the width (see diagram, p. 498, *ante*). Though the low opening may be really high enough for a doorway, the mind naturally reverting to the human figure as a standard of proportion, or to the "fitness" of things, at once condemns the proportion as bad for a doorway. We sometimes, it is true, see wide entrances to the pits of theatres, drill halls, and warehouses; but they invariably look out of proportion—that is, they appear awkward and offensive to our sense of fitness. Even in some Queen Anne houses we have seen doors of about a square, which looks contrary to our standard, because we naturally recall to the mind the human proportions; though, as a matter of actual use, the wide opening may be an advantage in getting in or out large pieces of furniture. The manner of teaching proportion which the Professor adopted has the merit of ocularly demonstrating one of the essential principles of design, for there are many people who imagine that a few inches more or less in the width of a door or window make no difference whatever. The same disregard, or ignorance, of a pleasing proportion is seen in the planning or selection of rooms, as if it made no difference whether the room was square or oblong, and that furniture of a certain size and shape could be made to look equally as well in a square as an oblong room. The window, like the door, has its own pleasing proportion. We can widen a window, as Professor Banister Fletcher says, but we can easily spoil it by the operation, unless we take care to preserve the unit of proportion by sub-dividing the width by mullions, as in a Gothic window, or by bringing the eye to dwell on the proportion of one of the panes. But it is absolutely essential to preserve some unit or individual part in a wide window, or it would be quite as offensive as a wide doorway.

The lesson of proportion need not stop at windows and doorways: it can be applied not merely to plans of apartments and their heights, but to the art of composition itself. For example, Professor Fletcher might have shown that into his first illustration of breaking up a plain building front into parts, proportion enters. If, for example, we take a long, straight façade perfectly flat of blank wall, or with windows in it, equally distributed, we may have a proportion that offends by its length and monotony. But break it up by projecting or recessing certain parts, say the two extreme ends and a wide centre, and the proportion of the whole is greatly improved, for although not an inch of height has been added, the eye is arrested by the three individual parts into which the whole façade has been divided, and the extreme length, being broken by oblongs of the contrary direction, is rendered less fatiguing to the eye. By further dividing, or by making vertical lines, the proportions may be still more altered. The effect is mainly due to the fact that the eye attends to the smaller individual parts instead of to the whole. To take a concrete case, a continuous barrack front looks much longer than an equal length of houses forming a street of the same height, because each separate house, being an upright oblong, arrests the eye, and the number of stories forms a scale to its real height. In design, then, the value of proportion is in composing the individual parts or subdivisions by giving them the proper ratio of height to width, and so drawing the eye from the proportion of the whole mass to that of the individual parts. What better illustration of this can be found than in towers? We constantly hear people talk of the proportion: it is either said to be squat or too tall, referring unconsciously to a standard in their mind's eye, from which they cannot get away. Thus, for example, St. Paul's dome would look very squat after gazing at a tower and spire like that of Salisbury, and many towers would look too short after seeing the Boston example. The proper proportion of any particular tower can only be judged by the individual parts or stories of which it is composed. It may look exceedingly tall and disproportioned if the belfry windows are small, and a mere repetition in every stage, but by subdividing the height into stories of unequal height, and by making the openings narrow and small here, and large there, the proportions will be pronounced excellent. Therefore propertion is not a matter of mass only, though of course we have to see our buildings through dense fogs sometimes, when they ought to look pleasing, but is chiefly to be studied in the smaller parts of a design. Bad proportion in a window, a door, or a fireplace, will always be an eyesore in a room, however well proportioned it may be; the same want of pleasing ratio will spoil a wall-paper, the panelling of a door or dado, or any ornament, though the eye in the latter cases would have to be more educated. The ordinary sense of fitness in proportion is, however, pretty general; and, roughly speaking, we may say, that it exists among people almost as strongly as the sense of harmony or music. As a discordant note jars on the faculty of hearing so we find a glaring disproportion, or want of fitness, produces an unpleasant sensation on the mind.

Proportion is, however, not confined to ratios and dimensions; we experience its influence in the right proportion of mass to detail, of plainness to ornament, and these are quite as necessary to learn by those who are studying artistic kinds of expression. The value of models or illustrations in the designs of carpets, wall-papers, decoration applied to furniture and metal-work is apparent. We often see patterns offensively obtrusive and distractive, owing to the want of quiet surfaces or a due intermixture of ground and pattern; furniture full of unrestful twists and turns, and carvings which distract rather than please; because the artist has not realised a sense of proportion between the plain parts and the ornament. These are things that can be taught by showing how much ornament can be placed on each part without overloading it, what surfaces or members should be plain, and which may be enriched. The whole question of ornament is one of "more or less." The amount of ornament on a surface must indeed be in inverse ratio to the height of relief. Thus every square quarter-inch on a Benares brass bowl may be occupied with incised ornament without offence to the eye, for the lines are narrow and the relief exceedingly low; but in repoussé work of massive relief in the same metal, anything beyond a simple device broadly treated is felt instinctively to be intolerably coarse. To teach applied design on rational principles, the student is in need not merely of examples in the art he is studying, but of demonstrations or models that will show him the most agreeable combinations. He should not be taught to copy furniture and decoration of various masters and styles, but be taught to realise for himself the due proportion between structure and forms of the plainest and most direct kind and the ornament that should accompany them. It is in these more extended ways we may learn the value of proportion in the arts of design, and not merely in regard to the heights and widths of openings, the proportions of columns and entablatures, and of apartments, which appear to be the only kinds of proportions that are recognised by the Classic revivalists.

STREET BRIDGES.

THE continual blocks that take place daily in our Metropolitan streets, partly owing to the relaying of roadways, and partly to the ever-increasing demands of public traffic, should compel our two leading authorities to devise a scheme for diminishing the delay and inconvenience caused thereby. In addition to road repairs, which are constant and necessary at one part or another of a busy thoroughfare, there is a further daily cause of block in proximity to the theatres and places of public entertainment. The Strand, for example, during certain hours of the day and night, is crowded to a dangerous degree by the vehicles which put down and take up the frequenters of these places of public resort. Sometimes the cabs and private carriages occupy a considerable space of the roadway, to the stoppage of ordinary traffic, both pedestrian and vehicular. A block of traffic, from whatever cause, is intensified by the difficulty experienced in crossing the road near the congestion. The pavements get crowded by persons who wish to cross, but find no opportunity of doing so, and the result is aggravated to an extent that calls for some immediate remedy. The Commissioners of Sewers have done something towards improving the City; but more might be done. We remember a suggestion was made to relieve the crowding near the Bank and Mansion House by forming subways between these points and the Royal Exchange. Why cannot this idea be utilised not merely there, but in other parts of the City, at the crossing of St. Martin's-le-Grand, Cheapside, and Newgate-street, of Victoria and Cannon streets, at the very crowded junction at King William-street, Cannon-street, and Gracechurch-street? No doubt in many of these places subways could not be formed without interfering with sewers, water and gas mains; but short lifts to subways passing below these substructures might be constructed. But why have not overhead crossings been attempted, which would be comparatively simple and inex-



pensive? These footway bridges could be constructed of light iron trussing, crossing at right angles to each road. At the junction in King William-street one bridge west of the Monument, crossing from the south side of Cannon-street to the angle of the block of houses, and thence across King William-street, would be sufficient. At the Bank a triangular or circular structure above the traffic, with stairs to each of the main streets which radiate from this point, might be formed. At Ludgate-hill a light footbridge is urgently needed, which could be placed next the railway viaduct. In addition to footbridges at main junctions, facilities for crossing ought to be provided at several points, as those opposite public buildings, so as to enable pedestrians to cross over. Charing Cross and the Strand are equally in need of these facilities. Of course, the principal difficulty is in providing for the approaches and stairs on either side, owing to the narrow-paved footways. For this purpose it might be necessary to acquire property and set back the house-fronts at the ends of the foot-bridge. The means of accomplishment are, however, small, compared with the advantages that would be insured in rendering our streets less crowded and more safe. Nor would it be difficult to obtain designs for structures of a kind that would be unobjectionable from an artistic point of view. We should have something better than the lattice girder foot-bridge of the railway station connecting opposite platforms. The chief danger to avert is the constantly recurring blocks on footways of streets crowded by vehicles. Timid ladies and children would prefer ascending a flight of steps to the risk of crossing, especially if they were in a hurry. The principal remedy is to prevent those temporary blocks which take place all day long in crowded thoroughfares, and for those who make the blocks—people who hesitate to cross the road of thoroughfares like Cheapside and the Strand—the plan suggested would afford a great relief.

ST. WOOLOS CHURCH, NEWPORT.

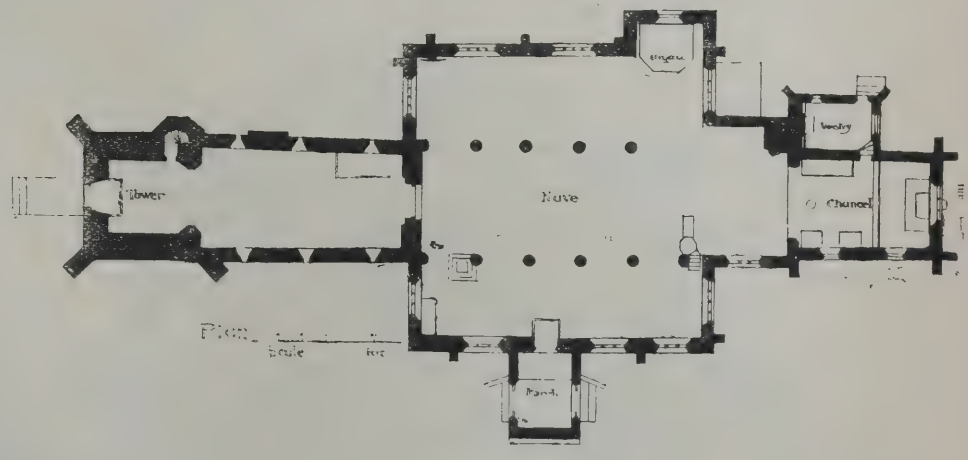
THE parish church of St. Woolos, Newport, Mon., is regarded as the most ancient and interesting of any in the district. It is finely situated on the summit of Stow Hill, being itself a landmark, and commanding a most extensive view of the surrounding country and Bristol Channel. The tower is attributed to Jasper Tudor, Duke of Bedford, who also built the great tower of Llandaff Cathedral, which goes by his name. There is an exceedingly perfect Norman nave and fine archway between this and the chapel. Some interesting old effigies remain, and other fragments. The church was restored in 1855; but the detail is not of the best type, being hard and mechanical in feeling. Previous to this, many interesting features must have disappeared from time to time; but the church has fortunately escaped stucco.

CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—XVI.

By Banister Fletcher, Jun., A.R.I.B.A.

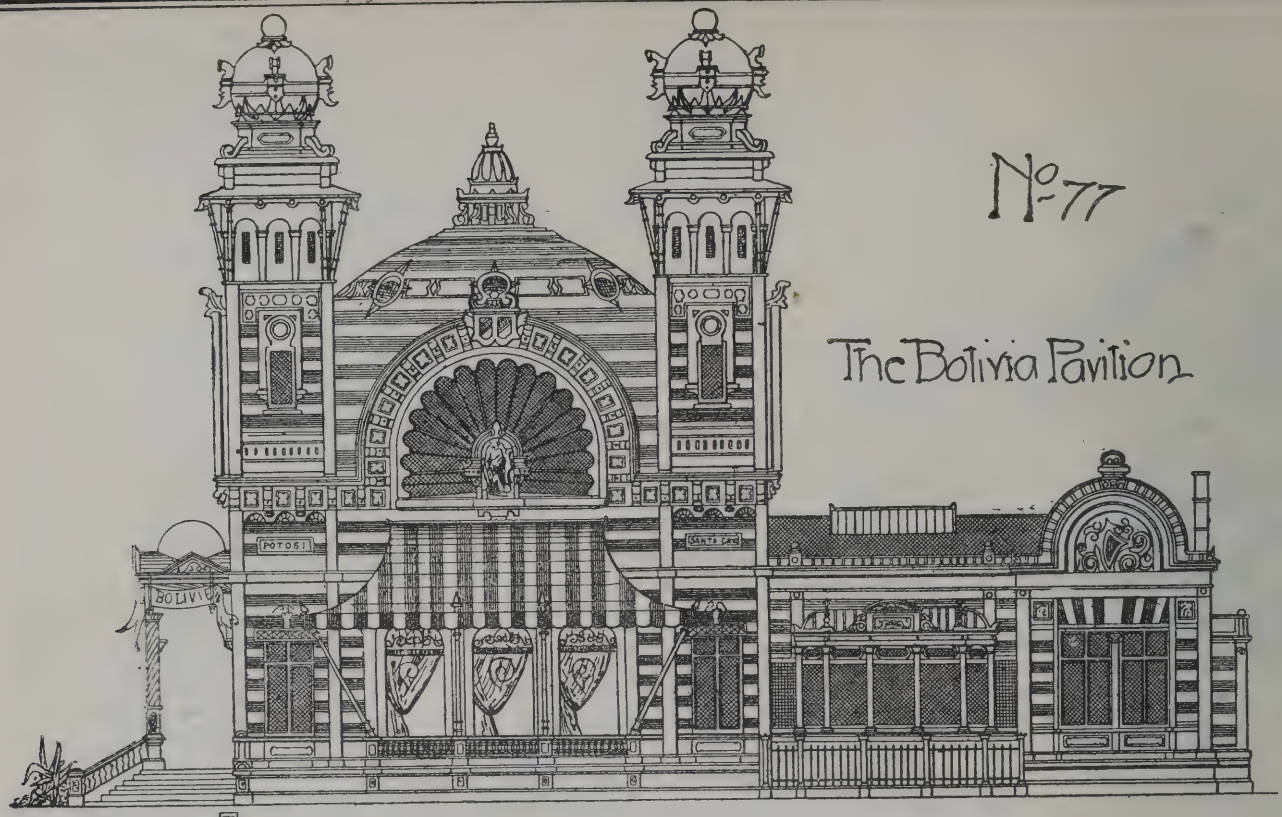
THE BOLIVIA PAVILION

IS situated on the Champ de Mars next to that of Venezuela. The architect is M. Fonquian, and he having only a limited sum at his disposal,



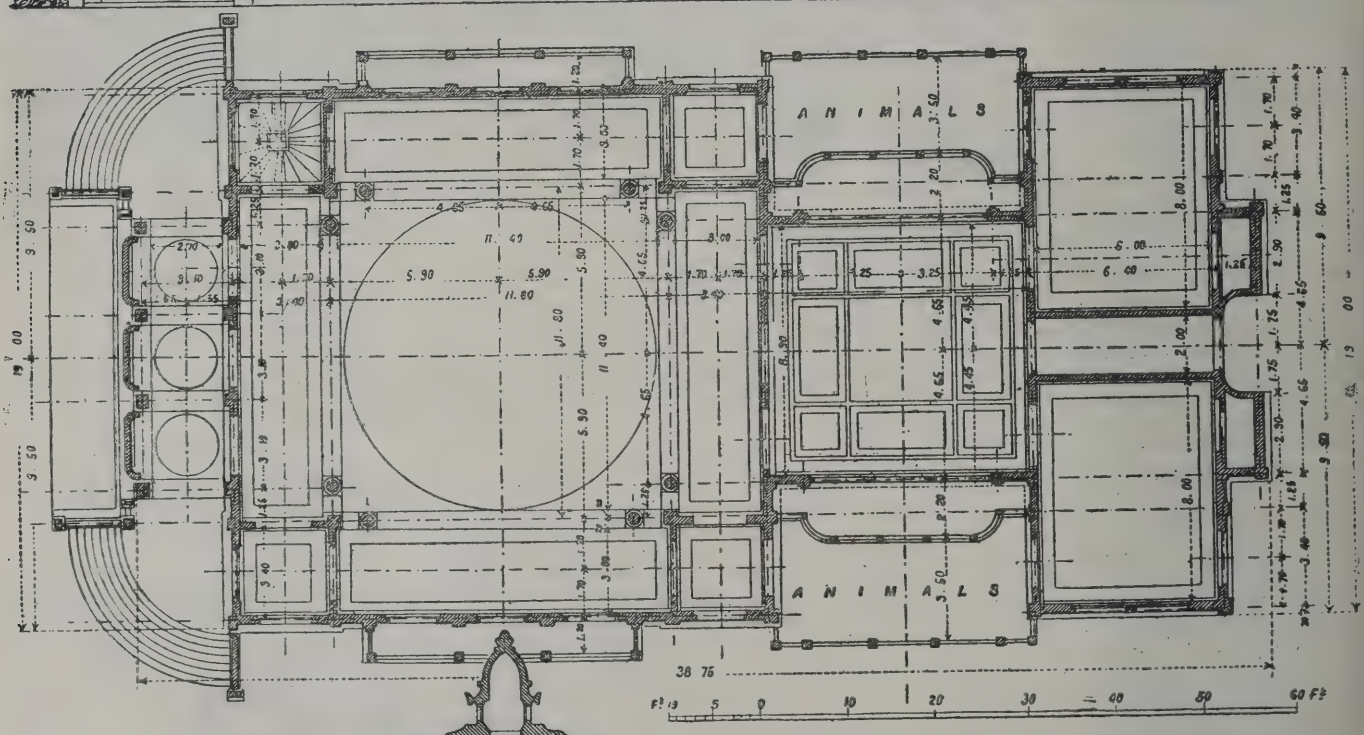
had to be content with a wooden framework covered with plaster of Paris and painted externally in bands of chocolate and white.

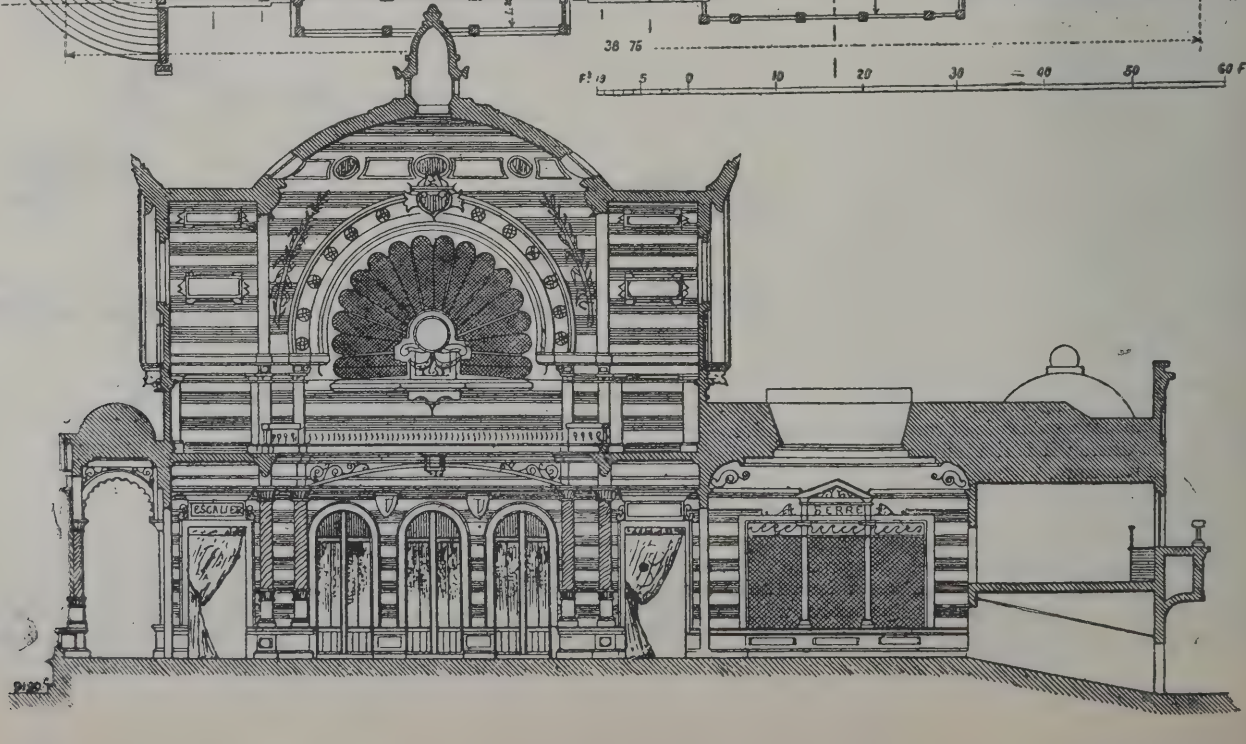
The architecture itself partakes after the modern Bolivian architecture (No. 77 from *Engineering*). The Pavilion is entered by eight quarter-



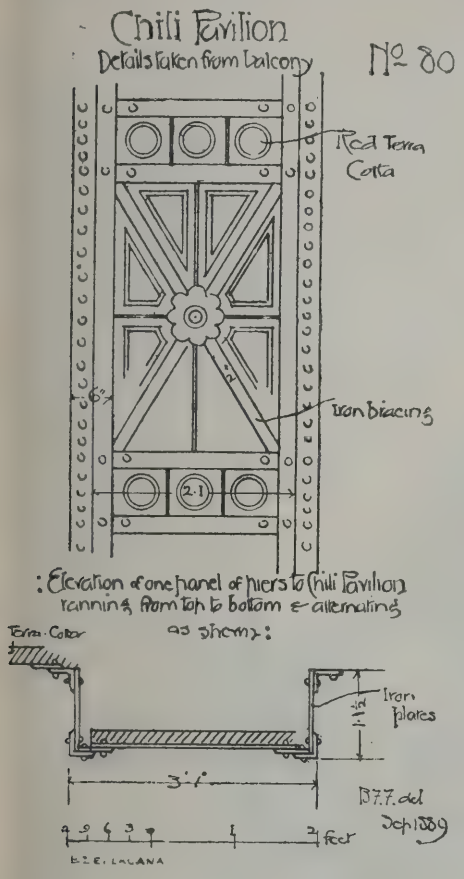
No. 77

The Bolivia Pavilion

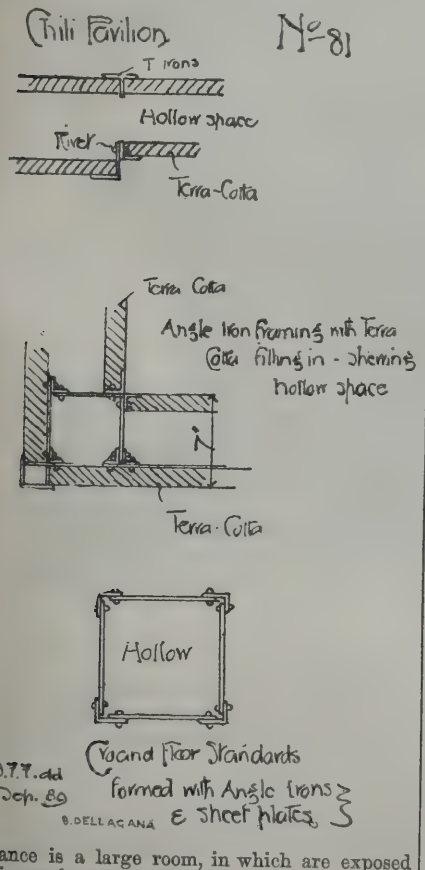




circular steps leading to a central porch covered with three small domes supported by twisted columns. From this porch the central space under the dome is reached. (The dome is 40ft. in diameter.) An aisle 11ft. wide runs round



this space and at the junction of these aisles is a tower at each corner. Under the tower in the left-hand corner on entering is the staircase leading to first floor galleries. Opposite the



entrance is a large room, in which are exposed specimens from silver mines, and further on the right and left are two more rooms used for exhibits, between which there is an exit fitted up as a silver mine with silver ore.

The wooden framework is very ingeniously fitted together, but I was unable to get any drawings of it from the architect. There is no



construction shown inside, the walls being entirely hung with canvas, mostly yellow.

The hall is lighted by large semicircular-headed windows branching out from the dome itself, and there are also small circular windows in the dome itself.

The dome itself is covered with felt. There is no ironwork used in the construction of this building.

THE PAVILION OF ECUADOR,

At the foot of the southern pier of the Eiffel tower, is by M. Chedaim, a French architect (No. 78, from *Le Génie Civil*), and is the reproduction of one of the temples which the Incas dedicated to the sun. It is not a reproduction of any particular building, and has been compiled from different archæological books on the subject. The sculptures have been copied from the Trocadero Museum.

THE CHILI PAVILION.

The Pavilion of Chili—the architect is M. Picq (No. 79, from *Le Génie Civil*)—occupies a space of about 82ft. × 65ft. 6in.

Before describing the building I propose giving roughly the particulars of the competition as an example of the manner in which designs were obtained for some of the buildings.

1.—Five weeks were allowed to send in designs.

2.—The building to be entirely original and founded on no style.

3.—The building to have two floors, with a central space open from bottom to top for light.

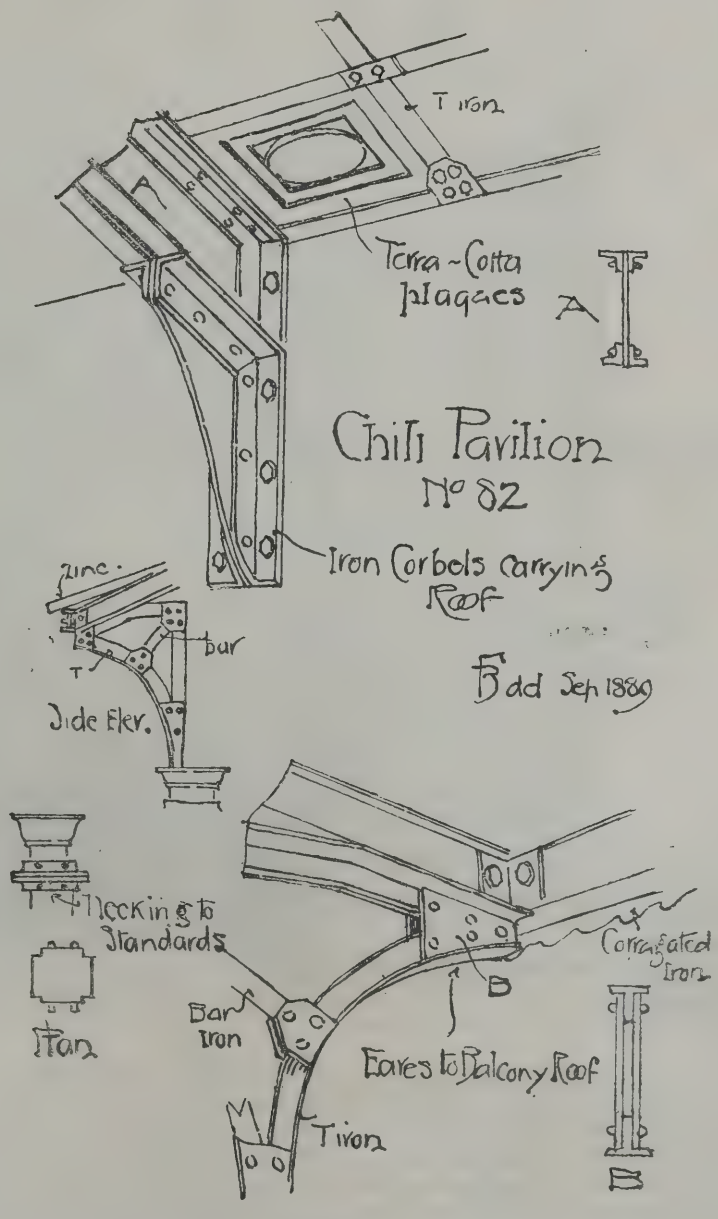
4.—To have an iron framework with terra-cotta, &c., filling in, the whole to be easily taken down and rebuilt in Chili.

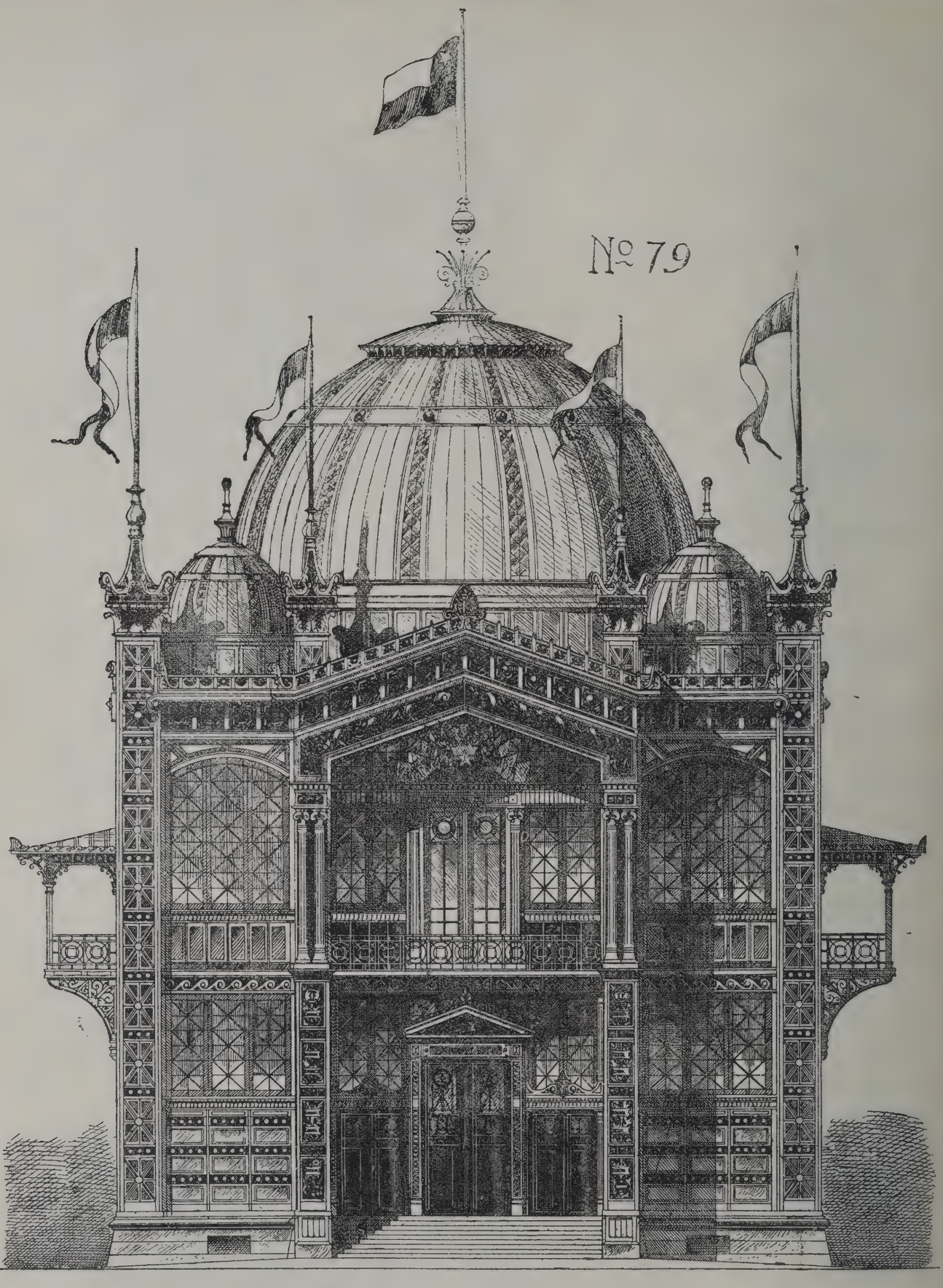
5.—The building, having to be erected in Chili, had to be built to resist earthquakes.

6.—The cost was not to exceed £5,600, including erection, taking to pieces, removing and erecting in Chili, and remaking up the ground on which it stood in the exhibition, lent by the administration.

By reference to the two plates it will be seen to some extent how far this has been accomplished. The plan is very much like that of the Bolivian pavilion.

The building has a central dome, and around it, in the four angles formed by the inter-





section of the aisles, four smaller ones; these five domes are covered with glass, and are surrounded by the ornamental caps placed on the top of the piers surrounding them. These piers are built with a framework of iron, and filled in with terra-cotta panels, the terra-cotta being arranged in patterns of different colours, which is very effective (see below).

The entrance leads direct into the aisles surrounding the central space. There are balconies (No. 82) on all sides at the first floor-level; on two of the sides these are held up by light iron cantilevers on the side of the entrance, and at the back the balconies are supported between the projecting piers.

The balconies are all in communication with the first-floor galleries.

Besides the ironwork which has been used as a decorative material, in the caps for instance, the materials principally used are terracotta, compressed concrete, bricks, tiles, squares of plaster Paris, "staff" for the moulded parts and wood, the latter material only being used, however, for flooring and the treads to the stairs.

The materials are in panels (see No. 80), so as to allow of their being easily taken down and removed to Chili.

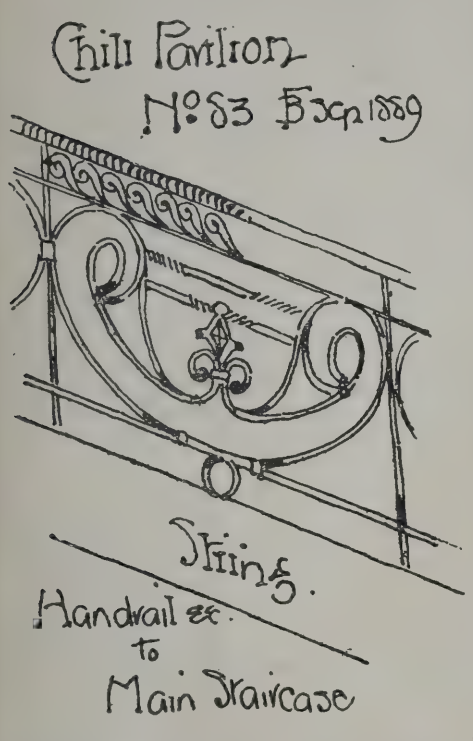
The walls throughout are hollow, No. 81 having two faces of terracotta, which equalises the temperature in the building, and will therefore be distinctly useful in Chili.

I think that this pavilion shows in one of the best ways the application of ironwork and terra-cotta to architectural work. The ironwork internally is painted two shades of blue-grey, and the ceiling to the galleries are formed in light T irons and "staff" panels of good design.

The small angle domes, constructed externally

of coloured glass, have an inner dome constructed of T irons, painted grey-blue, and with plaster of Paris panels.

The staircase to first floor has wooden treads on iron strings and balusters (No. 83).



The terracotta panels are coloured, browns and reds entering largely into the exterior decoration.

LE PALAIS DES ENFANTS.

To the west of the Chili pavilion comes the Palais des Enfants. It is constructed in wood and plaster. There is nothing pleasing about it. At its four angles are four grotesque looking towers. It is appropriate in one sense, in that it looks like a gigantic doll's house.

THE NICARAGUA PAVILION

Is another exception to the list of iron buildings. The architect is M. Stephen Sauvestre, who was also the architect to the decorations and constructions on the different stages of the Eiffel tower.

It is 65ft. × 32ft. 6in., and is composed of a large central hall, and one on each side, which are covered with roofs of ogee form, and these are covered with tiles and bands of enamelled red tiles.

THE COSTA RICA PAVILION

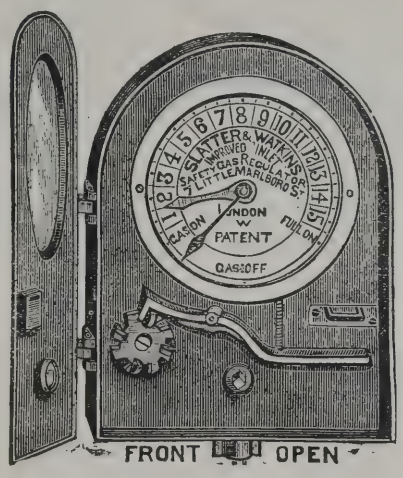
Is a small building two stories in height, and having a central glass dome. It is composed of iron pilasters, which form the framing and filling-in of plaster. The ironwork is painted grey, and the plaster in between is painted a lighter grey, which gives it a light and graceful effect. The horizontal architraves, &c., are in ironwork.

BOOKS RECEIVED.

Ipswich, Past and Present.—This series of illustrations in platinotype of the chief buildings and natural scenery of Ipswich, published by Mr. W. Vick, of that town, is approaching completion. Parts 21 and 22, now before us, are fully equal in interest to the earlier issues, and include views of Holywells Mansion, the seat of the Cobbold family; the old ducking chair and stocks; an Italian figure that has done duty successively as Justice on the market cross and as Ceres on the Corn Exchange, and is now preserved in the local museum; Stoke Bridge, an iron structure of 1819, and the mills and maltings on either side; the White Hart Inn, a picturesque plaster and timber building surrounding a courtyard, removed in modern street improvements; and the High School for Girls, a Palladian edifice, decorated with good Ionic columns, built in 1809 as Assembly Rooms, and used from 1859-1878 as a School of Art. Two more numbers will complete Mr. Vick's work, which will increase in value as time goes on.

INLET SAFETY GAS REGULATOR.

THIS is a simple but useful invention by Messrs. Slatter and Watkins, enabling the head of a house or large establishment to check



and regulate the inlet of gas from the main before it enters the meter, and to prevent anyone turning on the gas fuller than necessary for the sufficient illumination of the building. This is done by means of a stud on the ordinary regulator wheel, which enters a slot on a spur wheel, which is called the "stop wheel." The shaded hand on the dial, shown in the cut, marks at what point the supply is to be checked; when the shaded hand is at that point the gas inlet cannot be turned on further than will bring the black indicator hand level with the "stop" hand. The stop action is worked by the rack wheel on the left below the dial, the dial-hand indicating the result of the movement. The door can, of course, be kept locked after setting the regulator, so as to prevent its being interfered with.

ONE-MAN EXHIBITION OF PHOTOGRAPHS.

THIS week, at the Camera Club, in Bedford-street, W.C., an exhibition of very fine photographs has been opened by this society, showing a series by Mr. Lyd Sawyer, whose work has often been noticed in these pages. His views on the Tyne round Newcastle, giving studies of old shipping and boats, or such subjects as "The Fish Quay, North Shields," best illustrate this artist's tastes and his successes. The view over the city of Durham above the mists we have already drawn attention to at the gathering in Pall Mall. We admire his photographs taken in the Castle Garth, Newcastle, very much. Their depth of tone and sympathetic handling well accord with the picturesque irregularity of these tumble-down old thoroughfares. "Waiting for the Boats" makes a good figure group; but his set-figure studies, such as "Love's Young Dream," are apt to be commonplace. "The Place Verte, Antwerp," and other Belgian pictures are admirable, and the collection on the whole is decidedly clever.

The death occurred on Friday of Mr. William Gibson, of the firm of Messrs. Chesshire, Gibson, Son, and Fowler, auctioneers and surveyors, of New-street, Birmingham. Mr. Gibson was one of the best-known men in his profession in the Midlands. He was articled to the firm of John Chesshire and Son. In 1851 he became a partner in the firm, in connection with which he acted as surveyor to the Colmore and Gillott estates, and was probably concerned in the transfer of a larger amount of valuable property in Birmingham than any other person. He was sixty-eight years of age.

A fortnight since the foundation stone was laid of the chapel at St. George's school, St. Alban's. Since the school was erected four years ago, there has been an effort on foot to obtain sufficient funds for the erection of a chapel, estimated to cost about £1,400. The architects are Messrs. Whitfield and Thomas, Cockspur-street, W., and the builder is Mr. Wade, of St. Neots, whose contract amounts to £1,387. The chapel, which will be Perpendicular in style, of brick with stone dressings, will be 60ft. by 23ft. It is intended to accommodate 150 persons. The altar will be raised seven steps above the nave. It is proposed to connect the chapel with the school by a cloister.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

BRADFORD HISTORICAL AND ANTIQUARIAN SOCIETY.—The annual meeting of the above society was held at the Alexandra Hotel, Horton-road, Bradford, Yorks, on Monday evening. After the tea, the president of the society, Mr. T. T. Empsall, occupied the chair, and called upon the hon. secretary, Mr. J. A. Clapham, to read the annual report. The society now numbers 224 members, and has a balance to its credit of £62 3s., besides copies of the "Bradford Antiquary" to the value of £207. Many valuable papers were given during the winter session, and the excursions during the summer had been much enjoyed. The report and balance sheet were adopted, thanks given to the retiring officers and council, those who had contributed papers, and to the Press for their accounts of the proceedings of the society, in which Messrs. John Lister, M.A., Wm. Thackray, Robt. Denly, Thos. Lord, Percival Ross, Wm. Suddards, and others took part.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The opening meeting of the coming session of the above society was held at the Montgomery Hall on Tuesday night, and there was a large attendance of members. Mr. F. Fowler, the President, in his address congratulated the members on keeping up their numbers, and on the fact that the society had a good balance to its credit. The main object of their society was to look after the interests of their profession and to stand by one another. He trusted they would all continue to take an interest in the well-being of the society, and do their best to enlarge its sphere of usefulness. A pleasant social evening was spent, and the proceedings terminated with a vote of thanks to the president.

CHIPS.

The new tower just added to Lymm parish church, Cheshire, was dedicated by the Bishop of Chester on Tuesday week. It is 100ft. in height, Perpendicular in style, and has cost £4,500.

Dr. Freshfield has just presented to the borough of Winchelsea the old town-hall, which passed out of the possession of the inhabitants many years ago. It is proposed to utilise the building for public purposes.

Messrs. Peter Spence and Sons, of the Manchester Alum Works, commenced on Tuesday their purification for a few days of the whole of the Salford sewage, which amounts to about ten million gallons per day, at the Corporation sewage works, Weaste.

The governors of the North Wales Asylum decided on Friday to institute a competition for plans for the enlargement of that building; a premium of £100 to be offered, and an architect to be appointed as assessor in the competition.

The first sod of the East-End Industrial Exhibition, to be opened at Glasgow next year, was cut on Saturday by the Lord Provost. A guarantee fund of £11,000 has been subscribed for the exhibition, which will be held in the Dennistoun district. Mr. D. V. Wyllie, of Glasgow, is the architect of the buildings, which will cover 6,500 square yards, in addition to some existing Reformatory premises, which will also be utilised.

On Wednesday week the opening of Gledholt Wesleyan Chapel, Huddersfield, took place. The new chapel is from the designs of Messrs. John Kirk and Sons, Huddersfield and Dewsbury, and has been erected at the corner of Blacker-road and New Hey-road. There is accommodation for 700 seat-holders on the ground floor and in the gallery. The style is Free Renaissance. An organ has been provided by Messrs. P. Conacher and Sons, Huddersfield. The total cost of the contracts, exclusive of the organ, is about £6,000.

St. Paul's Mission Room in Edward-street, Burton-on-Trent, a gift by Lord Burton, will be opened by the Bishop of Lichfield in a few weeks. The building is of red brick, with white bands externally, and stone facings, and the front has a gable, on which stands a plain cross. The main room is 59ft. by 27ft., 17ft. high, and there are also two class-rooms. The cost has been £900, and the work has been carried out by Mr. G. Hodges, builder, from plans prepared by Lord Burton's local architect, Mr. Reginald Churchill. His lordship and his father have erected in the parish the cathedral-looking church dedicated to St. Paul, a large brick edifice dedicated to St. Margaret, together with schoolrooms connected therewith; a vicarage for St. Paul's, the large block of buildings which include the Institute and the Liberal Club, and now the Edward-street Mission Room.

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ILLUSTRATIONS.

A HOUSE AT WEYBRIDGE.—YEW-TREE FARM HOUSE, WIMBOLDSLEY, CHESHIRE.—PROPOSED NEW CHURCH, LONG CLAWSON, LEICESTERSHIRE.—SKETCHES OF OLD TIMBER-WORK IN SALOP AND LEICESTER.—STAINED-GLASS WINDOWS IN AINTREE CHURCH, NEAR LIVERPOOL.—FURNITURE AT THE ARTS AND CRAFTS EXHIBITION.—TWO SKETCHES FROM CAMBBIDGE.

Our Illustrations.

HOUSE AT WEYBRIDGE.

This drawing was exhibited this year at the Royal Academy. The house is erected in a pine wood near Weybridge. The builders were Messrs. Maides and Harper, of Croydon. The roofs are covered with red tiles, the upper walls are hung with Wrotham tiles, and the lower walls are faced with red brick. The plan given with the view explains the internal arrangements. Mr. Ernest Newton, F.R.I.B.A., is the architect.

YEW-TREE FARMHOUSE, WIMBOLDSLEY, CHESHIRE.

The house, which has just been completed, is built of red bricks to the first-floor height, and has cavity-walls, the upper walls being half-timbered, filled in between the framing with bricks, and with cavity also between exterior and interior framing; the exterior face of brick between the framing is covered with Portland cement and then lime-whitened, the frame being painted a dark oak. The moulded bricks for stringcourses, plinths, and chimneys are specially made Ruabon red from the works of Mr. J. C. Edwards. The roofs are covered with Ruabon red tiles, with special-made hip and valley tiles, no lead valley being used. The floor of entrance is laid with 4in. square Ruabon red tiles, supported above cellar with iron girders filled in between with cement concrete. Internally, the walls of kitchen, passages, and what may be termed the working-rooms are lined with glazed bricks, the lower portion of a dark colour forming a dado, and the remainder up to ceiling height of white glazed bricks. Special attention has been given to the ventilation by means of fresh-air inlet-shafts, formed in the walls and carried immediately under the ceilings, and foul-air outlet-shafts separately in the chimney-shafts. All wood floors have also been provided with means for air circulating all round each joist and under the wood floors, and similar means have been adopted for ventilating the roof timbers. The outbuildings have been laid out and built on the most modern principles suitable to the class of farming in the district, and are placed in position for economy in working arrangements in connection with the house, and so that the farmer can see all work being done in the farmyard when in the living-room.

NEW CHURCH, LONG CLAWSON, LEICESTERSHIRE.

The existing church of St. Remigius, Long Clawson, being in a dilapidated and dangerous condition, and devoid of any architectural or archæological detail worth preserving, it has been decided to pull down the old church and erect a new one, as shown in our illustration. The old church has had north and south transepts as well as nave and chancel abutting up to its central tower, and in designing the new church the architect has adhered to the original architectural outline and grouping. The cost of the new church will be about £5,500, exclusive of taking down and rehanging the five bells, which is to be done by Messrs. Taylor and Son, of Loughborough. The new bell frame will be arranged so as to allow of three more bells being fixed at any future time. The external walling is to be rock-faced Coxbench stone, and internally fine hammer-dressed Coxbench ashlar, with fine Hollington stone for all external dressings, and arcade piers and main piers, arches and groining of tower, and Corsham Bath for all other internal dressings. The reredos will be of Caen stone. The seating throughout, vestry, screen, and organ-gallery front, will be in pitch pine, and also the whole of the roofing. The roof will be covered with best pressed Staffordshire tiles. Mr. John Howitt, of Nottingham, is the architect.

SKETCHES OF OLD TIMBER-WORK IN SALOP AND LEICESTER.

The accompanying sketches represent a type of timber construction once prevailing in Shrewsbury and neighbourhood, and of which a great many fine examples still remain. Few examples, however, can be found which have not been seriously disfigured by the introduction of modern barge-boards, sash-windows, and plate-glass. The general effect, although rich, is still somewhat crude, the timber framing being tarred or painted black, and the plaster filling whitewashed. The roofs are generally covered with tiles; window-bars and sashes painted white. Rakedale or "Ragdale" Hall was built by one of the Earls Ferrars about the year 1629, which date can be found in a panel over one of the bay windows. Although built in the 17th century, the detail is extremely simple and severe, the whole building depending for its effect on the large masses and proportions of its chimney stacks and bases, bay windows, roof outline, and a wealth of mellow colour. The whole building is constructed of a rich red sand brick, with stone dressings to the bay windows and chimney bases, *white* mortar, a slight introduction of timber-work, and rich "blueish-purple" slates. At the side of the house is a quaint little church, and in the churchyard a tall foliated Perpendicular cross. The house, now divided into two tenements, has suffered severely in the interior design and arrangement; but still there is remaining some good 17th-century woodwork, chimneypieces and panelling, unheeded and uncared for. An idea of the general grouping and design will be obtained by reference to two sketches by Mr. T. Langham, published in our plates for Oct. 22nd and Nov. 5th, 1875, respectively.

ARTS AND CRAFTS EXHIBITION: CARTOONS FROM AINTREE CHURCH.

Mr. Aldam Heaton has lately executed some beautiful windows for Aintree Church, near Liverpool, in the five lancets of the apsidal sanctuary there, the subjects being arranged in the following order:—St. Peter, Our Lady, The Christ, Dorcas, and St. John the Evangelist. To-day we reproduce three of the cartoons, drawn by Mr. E. Ingram Taylor, who exhibits his work this year in the Arts and Crafts Exhibition, opened last week. In the windows under each figure comes a grisaille picture of the event in the life of the figure represented above, e.g., "The Denial" under St. Peter, "The Annunciation" under the Virgin Mary, "The Institution" under the Crucifix, "Alms-giving" (i.e., distribution of clothes) under Dorcas, and "The Vision in Patmos" under St. John. The point specially worthy of note in the figure of Christ is that He is represented as a king in royal robes, *standing* with outstretched arms in front of the cross, "Reigning from the Tree," as it was called in the Greek-Christian philosophy; the nude and dying Christ not coming into use till Augustine's time and the influx of Roman sentiment.

FURNITURE AT THE NEW GALLERY.

The sketches published herewith portray a few of the more strikingly novel exhibits in the way of furniture now on view at the "Arts and Crafts" Exhibition. Very good is the Library Mantel Fitting by Messrs. Liberty and Co., and we regret that the names of the various craftsmen engaged in its design and execution do not appear in accordance with the general rule. The credit given to the worker, as well as the seller, is one of the objects of the Society, and should be insisted upon. The woodwork of the Chimney-piece is in dull-polished teak, the panels and cornice, &c., being enriched with intagalio decoration, the sinkings being coloured blue. The design is Egyptian in character, the details being adapted from ancient examples. The face of the fire-opening, sconces, curb, &c., are in copper, the repoussé work on the former being very nice. We have shown in our sketch the two Chairs *in situ*, which are in keeping with the character of the work. The mahogany Corner Cupboard, for which Messrs. Reginald G. Blomfield and John Finch are answerable, is a refined and well-made piece, and possesses the merit of originality. It is inlaid with snakewood and ebony. Original, too, is Mr. Lethaby's design of the little rosewood Table exhibited by Messrs. Marsh, Jones, and Cribb. It may be thought by many to be rather too original; but originality is just what we expect at the Arts and Crafts, and feel disappointed if we don't get it, and we have plenty of mediocrity and tameness at other exhibitions. The Arm-chair, carried out by Mr. J. Britnell from Mr. E. W. Gimson's design, is comfortable and picturesque, and we fancy received its inspiration from Oliver Goldsmith's chair at the South Kensington Museum. We gave a review of the Exhibition in our last week's issue.

TWO SKETCHES FROM CAMBRIDGE.

St. Peter's College, or Peterhouse, as it is commonly called, received its name from the Church of St. Peter, which was used as the collegiate chapel. This church fell down in 1350, and was replaced by the adjoining church, Little St. Mary, which also served the purpose of collegiate chapel until 1632, when the present building was opened (see illustration). The latter is a most curious illustration of the mixture of the Gothic and Classic styles; some of the parts seem most incongruous. The interior is chiefly noted for its stained glass, which is particularly fine.—The illustration of St. John's College is a view of the hall from the second quadrangle. This court was built in 1595 to 1620 by Ralph Simons. The subject of this sketch is a very good specimen of the Tudor style, showing scarcely a trace of Classical influence. The third court, part of which (the library) was finished in 1624, shows a marked decline, manifested in the rudeness and the inappropriateness of the details; though, with it all, there is a picturesque quaintness, which is extremely pleasing.

CHIPS.

The designs of Messrs. W. L. Bernard, F.R.I.B.A., and R. M. Drake, of Bristol, have been selected in open competition for a new board school for 300 children, to be erected at Cadbury Heath for the Oldland School Board.

"Architectural Studies in France," by the late Rev. J. L. Petit, are shortly to be reissued in a reduced form by Messrs. George Bell and Sons, and the work is now in the hands of the binders. The original book was produced in 1854, with 200 woodcuts and anastatic process plates, partly the work of P. H. De la Motte. The bold style of drawing adopted in these sheets was unique at that time.

At the Hants Quarter Sessions on Monday, at Winchester, Lord Montagu presented, on behalf of the subscribers, a portrait of the chairman, Mr. Melville Portal, executed by Mr. A. Stuart Wortley, in recognition of his services to the county. The portrait was ordered to be hung in the room beside those of the Duke of Wellington, Lord Eversley, and Sir W. Heathcote.

Two windows in St. Mark's Church, Deptford, have been filled with stained glass as memorials, and were unveiled at the harvest festival last week. Mr. Taylor, of Berners-street, W., is the artist.

The Free Public Library in Skinner-street, Clerkenwell, was formally opened by the Lord Mayor and Sheriff on Friday last. The building has cost £6,500, and has been erected by Messrs. McCormick and Sons, from plans by Messrs. Kerslake and Mortimer, selected in competition.

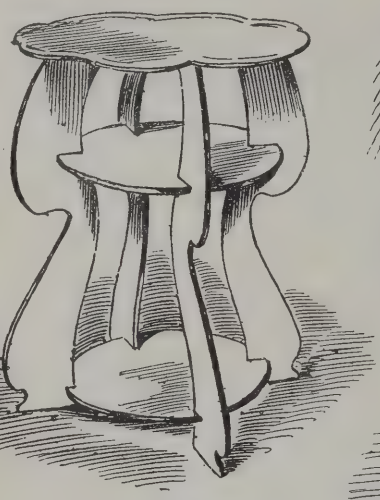
Two oak doors have just been fixed in the High Altar Screen in St. Alban's Abbey, in place of the deal painted ones that were so long there, as part of the work carried out at the cost of Mr. H. Hucks Gibbs, of Aldenham House. The doors were designed by Sir Arthur W. Blomfield, A.R.A., who has superintended the restoration of the screen generally, and have been made by Mr. Harry Hems, of Exeter. On the side facing west, both doors exhibit rich tracery work, the sides towards the Saint's Chapel being plainer in character.

SKETCHES OF FURNITURE

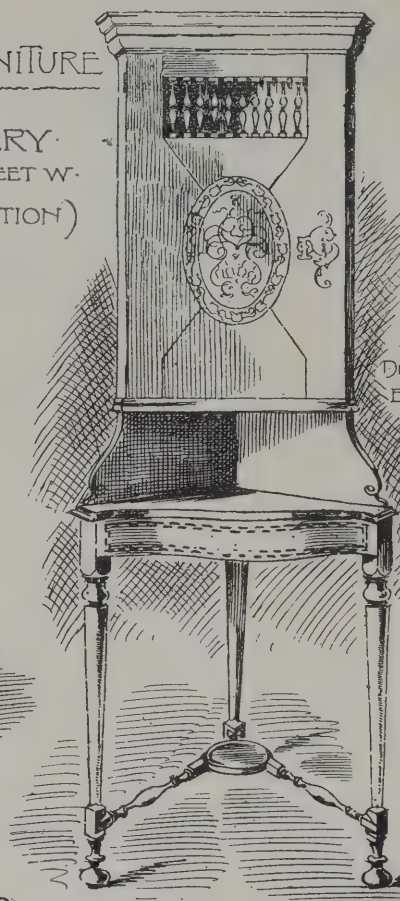
AT THE NEW GALLERY
REGENT STREET W.
(ARTS & CRAFTS EXHIBITION)



HANDLE & LOCK PLATE TO CUPBOARD (IN BRASS)



OCCASIONAL TABLE
IN ROSEWOOD
BY MARSH JONES & CRIBB
DESIGNED BY W.R LETHABY

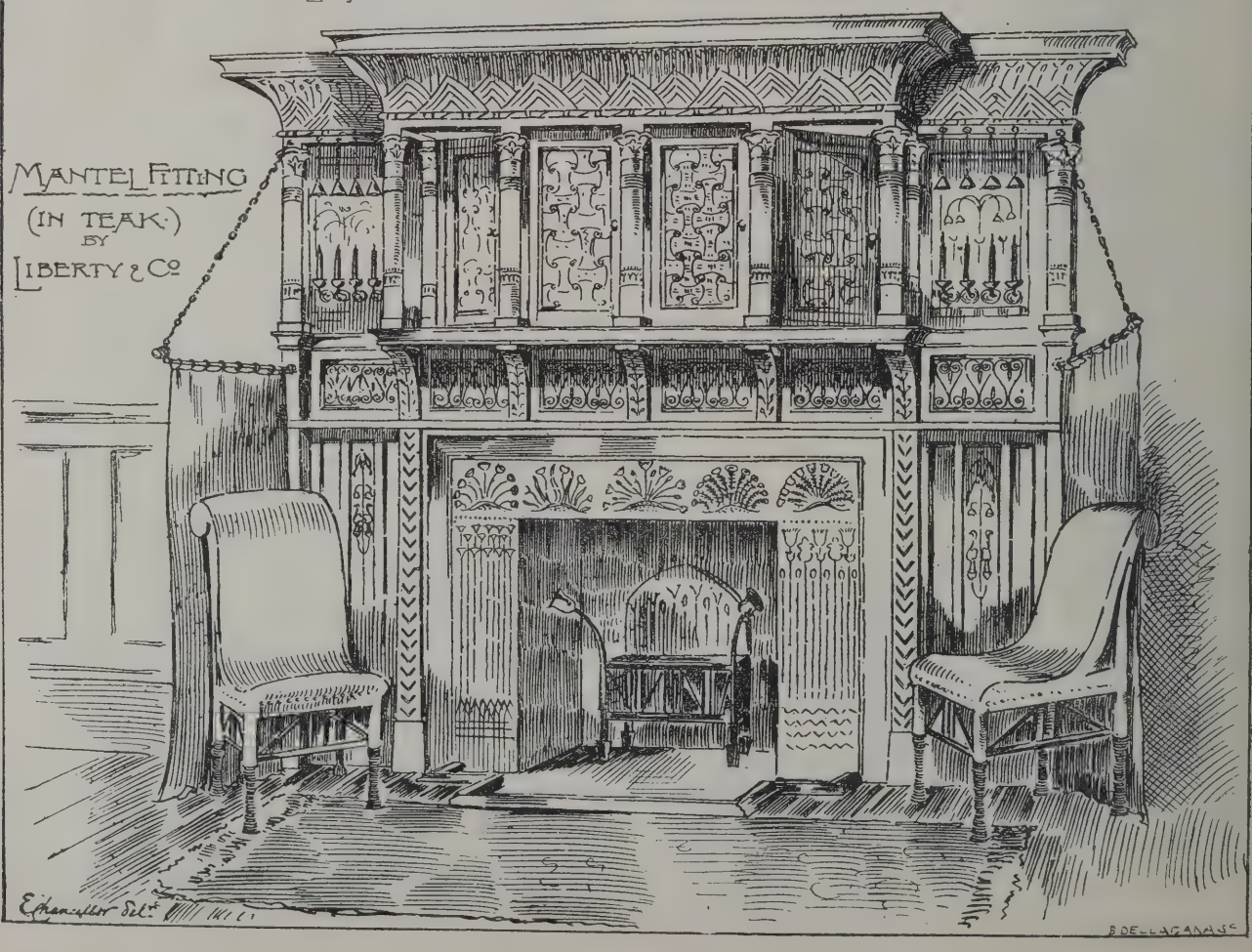


MAHOGANY CORNER CUPBOARD } DESIGNED BY REG.LD T. BLOMFIELD
EXECUTED BY JOHN FINCH

ARM CHAIR
DESIGNED BY E.W. GIMSON
EXECUTED BY J. BRITNELL



MANTEL FITTING
(IN TEAK)
BY
LIBERTY & Co



TWO SKETCHES FROM CAMBRIDGE

BY J. HUTCHINGS

The Chapel, Peterhouse



St. John's College



WAYSIDE NOTES.

SOONER or later old Vauxhall Bridge will have to be replaced by new, not, as the specification writer says, "of similar description," but of a totally different genus. The antiquated structure will not be removed just at present, since the London County Council is not in a mood to effect the improvement, much needed though it be. The Council have turned a deaf ear to the petition of the Lambeth Vestry, who prayed that the old bridge might be superseded by one of modern construction. The excuse urged is that other and more pressing Metropolitan improvements require prior consideration. This may be so: it doubtless is the case. At the same time, the day cannot be very far distant when the question of replacing the Vauxhall Bridge with a more convenient and substantial structure will be as pressing as any before the members of the Council. As a matter of fact, Mr. Osborn, the chairman of the Bridges Committee, while deprecating the idea of immediate construction, admitted that the present bridge was "narrow," that the gradients were "steep," and that "the piers offered some obstruction to the river." These, one would think, were serious defects, and such as would warrant early attention, even though the evil is of long standing. Mr. Osborn says that the bridge is a substantial structure, and likely to last many years, though at the same time it will be watched carefully as heretofore. This final statement is, perhaps, most to the point, and should reassure those who consider the life of Vauxhall Bridge worth but few years' purchase.

The question of "sky-signs" came before the Council at its meeting on Tuesday last, and from the opinions given and suggestions made, one may look forward to the possibility of the growth of these unhealthy fungi being promptly checked. They should surely be definable as "erections," and as such come within the scope of certain rules and regulations. Anyhow, the Building Act Committee have recommended that the Council's solicitor be instructed to take proceedings in a "test" case, and the recommendation has been agreed to by the Council. The result will be anxiously awaited by the artistic, as well as the common-sense portion of the community. It were a grand thing for London if the house-tops could be cleared of these nightmare objects, and their future erection entirely forbidden. If the County Council have not power under present statutes to make the clearance and restrain intending advertisers, *à la mode*, it might be possible, as Mr. Beechcroft suggested on Tuesday, to create new by-laws dealing exclusively with this threatened pestience. Not of much good would Mr. Waterhouse's artistic tribunal, or council of taste, to regulate the architecture of the Metropolitan thoroughfares—excellent though it is in theory—be whilst demoralised commercialism is rampant on ridge and parapet, the signs of the money-grabber crossing the blue vault of heaven by day, and mingling with those of the Zodiac by night.

Whether London is yet going to vastly increase in size and spread itself further and further into the country, or whether an awful Something is to destroy and humble our modern Babylon, it yet behoves those concerned to persevere in the good work of acquiring and preserving "open spaces." Although Bostal Heath is well without the boundaries of London proper, and, were the determining circle more regular, would be also without the pale of Greater London, the County Council are yet fully justified in expending money upon the acquisition of a tract of land thereon, or to next adjoining, known as Bostal Woods, and comprising a considerable company of sombre and sighing pines. A sum of £11,000, or, if the Plumstead District Board contribute a moiety of the cost, £5,500, is not by any means unreasonable for the 74 acres now available to the Council, who, by the bye, already have control of 55 acres of Bostal Heath. Whether or no the Council will purchase the additional ground yet remains a doubtful question, the recommendation of the Parks and Open Spaces Committee, pointing out the opportunity for acquiring the woods, having been postponed. For my own part, I hope it will see its way to act with promptness, and preserve a beautiful spot in north-west Kent from that undesirable and wholly unmerited end, defined by the newspaper letter - writer as "the encroachment of the speculative builder." Bostal Heath, as everyone knows, lies above Plumstead, over against the Essex shore of the river, which winds along in the green marshes below, its glistening reaches ever broken by the hastening steamers or slow-moving barges. Just one of those prospects I love does Bostal Heath afford—a bright, bracken-covered foreground, an expanse of emerald grass-lands, with a silvery, craft-laden waterway therein, and an undulating distance leading far away into a blue and uncertain haze. Yet but one quarter-turn, and we look over the London basin, with its vast concourse of houses and buildings, outflanked by a maze of tall chimneys, behind which, wreathed in dark, lurid clouds of drifting smoke, the winter's sun sinks red and fiery.

Of all the clumsy, barbarous-looking methods of going to work with the assistance of modern steam-power, I should say that the system of road-scarifying, as employed on the Embankment and elsewhere in the reparation of the surface of London streets, is most decidedly the most clumsy. It certainly affords one a little recreative amusement for a few minutes to watch operations; but there is something to me infinitely revolting and offending to the sense of the fitness of things in the spectacle of a powerful traction-engine groaning and snorting, swaying its vast weight backwards and forwards, and grinding to powder beneath its great wheels the granite chips in vain efforts to move the clumsy "scarifier," anchored, nose-deep, in the surface of the roadway. Such an exhibition of misapplied ingenuity has been a common object of the Embankment lately, and within the last few days visitors to the Royal Hotel, Blackfriars, have had extra special rehearsals, the slight incline in the roadway at that point of the Embankment having increased the frequency of the occasions where the engine becomes powerless to shift the "scarifier," though its driving-wheels are skidding and pulverising the stones beneath. That it does its work in the end—after much reversing of gear and jerking of the coupling chains—one cannot deny, seeing that one of these road-ploughs seems to keep four or five large steam-rollers busy reconsolidating the metalling. But the method of dragging up the old stones must surely strike others as barbarous, and expensive, too; for an engine subject to strains, such as I have witnessed on more than one occasion on the Embankment, cannot last long. I did hear that, owing to strikes and difficulties with the navvies, the old and common-sense (until a more scientific "scarifier" is forthcoming) method of hand-picking was abandoned some time back, and the present system employed. Unless an improvement on this comes along, I should say it is a pity that the road-makers cannot return to hand-labour. The method employed is offensive to every true mechanic, every attitude of true mechanism—especially of the steam-engine—such as dignity, ease, rhythm (best simplified, perhaps, by the Galloway engine, at the Crystal Palace) being absent, and in its place a display of brute force, soon brought to naught.

I did not think that the G.E.R. would do wrong with the old façade and ceiling of Sir Paul Pindar's house, and was scarcely surprised to learn that the company had offered them to the South Kensington folk. It remains to be seen what the museum authorities will do with these relics. There is not, if I remember correctly, a great amount of room for features of this sort in the architectural room, what with the cast of the famous Roman column, and the many other miscellaneous and interesting objects in view. Anyhow, it will be "standing room only," if not actually full inside. A façade may be regarded for practical purposes as being, like Euclid's superficies, a matter of length and breadth only; and in the same light may a ceiling be viewed. Consequently, if stowed upright in some gallery, and flat against the wall, no vast amount of space will be taken up in depth, at any rate. So, one fine day, when the museum trustees have taken over the mortal remains, so to speak, of Sir Paul's old home in Bishopsgate-street, we may find them comfortably lodged at South Kensington, having first been cleaned down and made respectable enough to receive visitors.

Further reflection on the issue of the Whitefield Tabernacle competition draws me more towards the view that, error or no error, the promoter's plan should have been the basis of operations, and that competitors exceeding the limits were throwing themselves out of court; and it would seem but just and fair that, if the promoters accepted a plan exceeding the stipulated dimensions, they should at least handsomely compensate any "placed" designs the authors of which have been handicapped by adhering to the smaller site. There seems to be no two views as to the question of the size of site, all declaiming against the encroachments made by the two competitors; and certainly if the award first made hold good, the assessor will have created a very bad precedent, and the Whitefield Tabernacle incident will become ill-famed in the annals of architectural competitions. One would gladly say little or nothing about a slight matter of opinion where an assessor's report is concerning, for the sake this, of the welfare of competitions generally; but in the present case, so far as one outside the competitions—such as myself—can judge, a vital principle is at stake. This being so, it would be wrong not to criticise the award made.

I am really glad that at last the Association has brought off a successful conversazione. To tell the truth, I did attend one of these evenings some years back, and ever since avoided them. As a result, perhaps, I missed Friday week's reception, which, according to accounts, was completely successful. Having thus overcome the difficulties in the way of making the conversazione a success, we may hope that future years will find no relapse to the old dulness, which, as some must admit, was, on occasions, oppressive.

A.A. Notes have come to hand, and a good number; not the least interesting of the contributions being the continuation of Street's lectures on architecture. "G. E. S." must have been in good form when he wrote this portion of his Academy discourses. Every sentence has something of great import to sketchers of architecture for architecture's sake—how different, alas, with Aitchisonian and other like utterances of these degenerate days. "The Coming Session" is not up to the style of the Editorial in the September issue, and moreover goes for Mr. A. B. Pite's opinions only just above the belt. Mr. Pite writes anent the proposed changes, and incidentally says something about a certain examination, wherewith I accord. It seems like an echo of my own views, and had we chanted the theme together before the assembled members of the A.A., no better conclusion can I imagine than a stepdance by Mr. Pite and myself—*pas de deux*, or "toe-and-heel" in full view of the audience. Mr. W. Millard writes on the architecture of Rhenish tributaries, and the writer of the "Notes" says no one can hold a candle to Mr. Norman Shaw in Domestic work, which should be gratifying to our great architect, and temporarily bad for the office-boys in some other studios where Domestic work is turned out.

GOTH.

The parish church of St. John, Marchwood, Hants, was re-opened last week after partial restoration. The organ has been removed to the north transept, having been enlarged to nearly double its original size by Messrs. Bishop and Son, of London. The chancel floor has been laid with encaustic tiles by Messrs. Carter and Co., of Poole. The work also includes the re-arrangement of the seats.

On Friday, Mr. Arnold Taylor, an inspector appointed by the Local Government Board, held an inquiry at Colne, Lancs, concerning an application made by the Local Board of that town for sanction to borrow £22,000 for the purpose of gasworks extension, and £2,000 for private street improvements. The application was unopposed, and evidence was given showing the remarkably rapid growth of Colne during recent years.

Mr. Abernethy, of London, has visited Clevedon, Somerset, and reported to the Local Board of Health on the condition of the pier. He found the pier head useless for passenger traffic. He proposed to extend the head on either side 50ft. by a new iron structure connecting the present one, and to construct a landing stage of timber. He found the approach in very good condition. Sir E. H. Elton stated that the directors would make a present of the pier to the town should the ratepayers elect to take it over, subject to a payment of £700 or £800 debt upon the pier, which originally cost £14,000. Mr. Abernethy was requested to prepare plans and estimates.

Building Intelligence.

Birmingham.—Plans, &c., have been prepared for a new Hebrew club, which building it is contemplated to erect in Holloway Head, in this city. This structure will be four stories in height, and will consist of caretaker's premises, wine cellars, refreshment bars, large and lofty assembly-room, billiard-room, card-rooms, and necessary lavatories, &c. The style adopted is a free treatment of English Gothic, ornamental brickwork, stone, terracotta, Minton's tiles, and other decorative features being introduced into the front elevation.—Some important villa residences are in course of erection, situated in the Mayfield-road, Moseley. The elevations are of an ornamental character, and Gothic in style, with moulded gables, dormer windows, porches, two-story stone bay windows, ornamental glass in lead lights, &c. The builder is Mr. George S. Spokes, of Sherlock-street, and the architect for the whole of the above buildings is Mr. John Statham Davis, of 53, Newhall-street, both of Birmingham.

Cambridge.—Through the munificence of Mrs. Lyne-Stephens, of Lynford Hall, Norfolk, a Roman Catholic church has been erected at Cambridge. The dedication took place last week, and the imposing opening ceremony was conducted on Wednesday. The edifice is situate at the Hyde-park corner of Hills-road, the main thoroughfare from the railway station, and, with its lofty spire of 215ft., is a prominent object for many miles. The cost of the structure has been £70,000. The edifice is called the Church of Our Lady and the English Martyrs, and will accommodate about 300 persons. The style is Early Decorated, and the materials Ancaster and Bath stone. There is an oak baldacchino over the high altar, and carving is profusely introduced both inside and outside the building. The stained-glass windows have been provided by Messrs. Hardman and Powell and Westlake and Co., whilst the organ has been erected by Messrs. Abbott and Smith, of Leeds. The architects were Messrs. Dunn and Hansom and Dunn, Newcastle-on-Tyne and Bristol, and the builders Messrs. Rattee and Kett, Cambridge. The carving has been executed by Mr. R. L. Boulton, of Cheltenham, and Mr. Ralph Hedley, of Newcastle. We illustrated the exterior in our issue of June 26, 1885, and the interior on May 30 of the present year.

Frongoch.—The Welsh Whisky Distillery, Frongoch, near Bala, North Wales, is the first whisky distillery in the Principality. The buildings comprise a malt-house, two malt kilns 36ft. by 36ft. each, and fitted up with the most modern drying floors and furnaces, the peat store, Excise officer's offices, manager's private and general offices, and directors' board-room, beautifully fitted up in mahogany and pitch-pine, with lavatory, w.c.'s, &c. The main entrance to the premises and inner courtyard is 20ft. wide, and fitted up with a pair of wrought-iron gates, with a small wicket gate in them, from the architect's designs. The whole of the works have been carried out from the designs, and under the supervision of, Mr. Walter W. Thomas, M.S.A., architect and surveyor, 25, Lord-street, Liverpool, with Mr. Edward Watkin as clerk of works; the contractor for buildings being Mr. Edmund Gabbutt, Liverpool; and for the plant and machinery, Messrs. John Miller and Co., engineers, Glasgow.

Glasgow.—At the Glasgow Dean of Guild Court last week a statement was submitted by Lord Dean of Guild Ure with reference to the building operations in Glasgow during the past year. During the twelve months ending at August, buildings and streets had been constructed which were valued at nearly £450,000. The number of dwelling-houses erected was 1,240, and their value was computed at £180,400; while 22 churches, halls, and schools were valued at £46,700; 162 warehouses, stores, and workshops, at £182,870; and the alterations and additions were estimated to be worth £17,790. Of the 1,252 dwelling-houses, 321 were of one apartment, 666 of two apartments, 190 of three, 57 of four, 17 of five, and only 1 of six.

Hull.—The foundation-stone of the Roman Catholic Church of St. Mary, Wilton-street, Holderness-road, was laid by the Bishop of Middlesbrough on Monday. The church will be Early English in style, and will consist of a nave 65ft. by 22ft., with north and south aisles 10ft. wide, and side chapels at the east end of them. The sanctuary has a circular apse. The nave is divided from the aisles by an arcade of four bays of moulded arches on stone columns, with shafts of blue Normanton stone. Above the arcade is a clerestory lighted by lancets. The roof-timbers will be of pitch pine divided into bays by principals resting on carved stone corbels. The nave floor will be laid with wood blocks in a herring-bone pattern. The sanctuary will be laid with encaustic tiles, and the steps to the predella of polished Sicilian marble. The two stone doorways in west front are under one recessed brick arch, in the centre of which is Our Lord crowned with thorns, and on either side spandrels of Early English foliage. Over this arch is a crocketed gable, in which is a carved niche for the Madonna and Child. It is proposed to fill the six sanctuary windows with stained glass by Messrs. A. O. Hemming and Co., of London, and the west end windows with grisaille glass, the rest plain cathedral tinted glass in quarries. The accommodation is for 500 adults, and the contract price £1,868 10s. It is being carried out from the designs of Messrs. Smith and Brodrick and Mr. Arthur Lowther, Hull. The contractors are Messrs. Colley and Levitt, bricklayers; Mr. George Scott, joiner; Mr. Peers, mason; and Mr. Beal, plumber.

Ipswich.—The Church of St. Michael, in Upper Orwell-street, commenced twelve years since, has just been completed by the addition to nave and transepts of a chancel, vestry, and organ chamber. The new work, which has cost £1,500, was consecrated last week. The style of the chancel is Early English, in harmony with the nave, but of a more elaborate character. The facings are of red brick, with Ancaster stone wall lining, finished with moulded capping at the level of the window sills. The inner arches to the windows and other details are in Bath stone. The chancel arch, which is of stone, and in height 33ft., has corbelled and clustered shafts and floriated capitals. There is a single arch between the chancel and organ chamber to north, similarly moulded, but different in detail. The organ chamber is divided from the transept by double-brick arches, with a central column in stone. The side windows are lancet-headed. The east window is Transitional in date. It consists of three main lights divided by mullions, with each main light again divided into three lights by minor mullions. The floor of the chancel is paved with Ancaster stone from the Lindley quarries, in three different shades. The roof is of single hammerbeam construction, and takes the form of a two-centred arch. The work has been executed from details supplied by Mr. E. F. Bisshopp by Mr. Thos. Thwaites, contractor. Mr. Harpham executed the stonemason's work, and also the stone-carving; and Messrs. John Groom and Son did the wood-carving.

Leamington.—New Board schools in Clapham-terrace have just been opened. The building is in the Gothic style, arranged upon the central hall principle—i.e., a large assembly hall, 80ft. by 30ft., for boys and girls, with an open roof and ironwork principals, and opening out of this are five class-rooms upon either side, accommodating each 60 boys and girls respectively. These class-rooms have a black parian cement dado above the wood dado, to serve, instead of using the ordinary blackboards, for object lessons; and the windows are glazed with tinted cathedral glass. The entrances, corridors, and lavatories are lined, to dado height, with white glazed bricks, with a capping of turquoise blue, and fitted with ranges of Finch's lavatory basins, with slate tops. The infants' department has also a large room, 45ft. by 25ft., finished, like the assembly hall, with open roof, but with a gallery at the north end and a five-light window. Opening out of this room are three class-rooms, accommodating 60 and 65 children each; a Kindergarten for 75 children; and a lavatory. The whole of the interior walls are lined with Kenilworth pressed bricks and left uncoloured. The latrines are lined with glazed bricks, paved with Walker's iron slag paving, and having an automatic siphon flushing-tank. The external elevation is of Kenilworth pressed bricks, relieved with red terracotta from Mr. J. Thompson's, of Northwich. The gables are half-timbered with a pair of enriched foliated panels in red terracotta, and filled in between the timbers with oblique lines of Maw's alternate red and black tiles. The roofs are covered throughout with Broseley tiles. The bell turret is framed in open timber-work, and is surmounted by a lead-covered spire, the apex of which is 65ft. high. The heating is effected by the low-pressure hot-water system by Messrs. Musgrave and Co., of Belfast. In the corridor immediately under the bell tower is a small panel, executed by Messrs. Maw and Co., with the following record:—"Erected 1889-1890. Fredc. Foster, M.S.A., architect; J. Fell, contractor." The clerk of the works was Mr. Edward Atkins, of Leamington. The cost has been £7,500, and the furnishing of the schools about £450.

London County Council.—At its meeting on Tuesday the Council passed a resolution authorising the purchase of Brockwell Park. A proposal of the Parks and Open Spaces Committee to acquire Bostal Woods, a pine forest of seventy acres, adjoining Bostal Heath, near Plumstead, was deferred for further consideration. The Council declined to carry out the suggestion of the Lambeth Vestry to reconstruct Vauxhall Bridge, not regarding the matter as urgent, although desirable. The Building Act Committee reported that their attention had been called to the erection of "sky signs" upon various premises in the Metropolis without license of the Council having been either applied for or obtained. As they considered the erection of sky signs most objectionable and dangerous, they recommended "That the solicitor be instructed to take the necessary proceedings in a test case, the particulars of which will be furnished by the superintending architect" (Mr. Blashill). Mr. Beechcroft thought the Council already had sufficient power to deal with these signs by drawing up the requisite by-laws, and moved that the matter be referred back to the Committee for that purpose. Colonel R. W. Edis, F.S.A., contended that the sky signs were just as much "erections" coming under the supervision of the Council as were iron and glass roofs projecting over the pavements, as to which the Council had undoubted rights. The amendment was negatived, and the recommendation of the Committee agreed to.

Northampton.—The consecration of St. Paul's Church, the fourth and last of those erected in the town under the Church Extension Scheme started in 1875, took place on Thursday, the 9th inst. The new church, the cost of which is about £5,000, and which will accommodate 600 persons, has been erected from plans by Mr. H. H. Holding, A.R.I.B.A., Northampton, also the architect of St. Mary's, Far Cotton, who has in the design kept to the fully-developed arrangement of nave, aisles, and chancel. The style is of the Middle Pointed period. The eastern ends of the nave-aisles are developed into quasi-transepts. There is no western door to the building, but there are north and south porches. There is a north aisle to the chancel, and on the south side of the chancel are vestries for the choir and clergy, and a lofty organ chamber. The main gables to the chancel and transepts have flanking turrets in stone; and a square bell-turret terminating in a spirelet and vane forms a central feature in the west front. The church has been built wholly of stone—inside and out—obtained within the county of Northampton, both with regard to the walling and wrought stonework. The walling stones were all obtained from pits at Kingsthorpe, and all the wrought stone came from Earl Winchilsea's quarries at Weldon, near Kettering. The nave is seated with chairs, and the choir stalls are of wainscot oak, with traceried fronts and carved ends. The carved pulpit is of Farley Down and York stone. The font is also of Farley Down stone, on Devonshire marble shafts, and with carved panels and bosses; it is designed to have a lofty wood cover. The contractor was Mr. J. T. Wingrove, of Talbot-road, Northampton, who has also executed the whole of the fittings, including the stalls, pulpit, and font. Mr. Reynolds, of Northampton, carried out the carving.

Peterborough.—After a restoration, which has been in progress for more than seven years, Peterborough Cathedral was reopened on Tuesday. The work of restoration was commenced in January, 1883, being necessitated by the dangerous condition of the central tower, which was found to be in a state of instability, owing to the failure of the north-east and south-east piers. This portion of the work was estimated to cost £13,000, while the total amount required for the complete restoration of the Cathedral was £55,000, and the appeals made to the country

have resulted in over £30,000 being subscribed. Mr. J. L. Pearson, R.A., was appointed the architect for the restoration, which has been carried out by Mr. John Thompson, of Peterborough. The central tower has been rebuilt, but the lofty angle turrets added by Dean Kipling were not reconstructed. In addition the pillars of the choir and the north and south transept roofs have been repaired, and both transepts have been underpinned. The other works done include the cleansing of the internal masonry of the nave, aisles, and western transepts, the placing of a cement floor in the triforium, and new bell-frames in the north-west tower. The total cost of these works has been £31,669 17s. 7d. That which has been done to the interior has been met by special donations. At a cost of £2,689 there have been provided fourteen stalls with richly carved wooden canopies, together with the flooring for the whole of the stall work for the two bays west of the central tower. The old Benedictine arrangements have been reverted to, and the choir stalls have been carried west, so as to include the first two bays of the nave. The stalls and pulpit have been carved by Mr. Nathaniel Hitch, of Vauxhall. The works on hand, or provided by special donations, comprise a choir, pulpit, Bishop's throne, and marble floor for choir, exclusive of aisles and transepts. Other works, urgently needed, which are estimated to cost £4,000, consist in making good the masonry of the north and south transepts, and in underpinning and repairing the north-east angle of the eastern chapel. It is also proposed, when funds are forthcoming, to complete the stalls with bookboards and seats, at a cost, with canopies, of £5,176, to rearrange the east end of the choir, and to reconstruct the organ in another position.

West Hartlepool.—The new church of St. Aidan was consecrated by the Bishop of Durham on Saturday. The church, which will have 615 sittings, will cost about £4,250, exclusive of the site and the tower and spire. The character of the fabric is Early English, and on plan comprises nave, aisles, and chancel, with organ chamber on the north, and choir and clergy vestries on the south side of the chancel. A tower with spire is to be built over the organ chamber at some future date. The nave arcade consists of five bays, with arches springing from circular piers; the clerestory above is lighted by a range of three-light windows. The west end is pierced by a large tracery window, with single lights on either side. The chancel is divided from the nave by a low parapet wall, with a moulded arch above springing from corbels. The east end is lighted by three lofty windows, with deeply splayed jambs and moulded arches. The chancel fittings are on a very complete scale; on either side are the canopied choir and priests' stalls, with the organ-case rising above on the north side. The pipes are decorated in colour; they are inclosed in a case with moulded cornices and cusped heads. The organ has been built by Messrs. Conacher and Co., of Huddersfield. The reredos is formed with high dossal hangings and side wings, all embroidered, together with the altar frontal. The walls of the sanctuary are draped in a similar way. The font consists of a massive circular bowl, resting upon a base with clustered shafts. The total length of the church is 118ft., and width 52ft. The whole of the internal fittings and roofs are of unvarnished pitch pine; the walls, both inside and out, are faced with red brick, with dressings of Whitby stone. The church is heated by a hot-water apparatus supplied by Messrs. Dinning and Cooke, of Newcastle. The contractors for the mason and bricklayers' work are Messrs. W. Scott and Son, of Sunderland, and for the carpenter and joiners' work Messrs. G. Clark and Co., of West Hartlepool. Mr. T. Adamson, of Sunderland, acted as clerk of the works. The church has been designed by Mr. J. H. Morton, F.R.I.B.A., of South Shields.

The post-office at Thirsk was reopened last week, after enlargement amounting to rebuilding. Mr. Westwick, of Thirsk, was the builder, and the fittings were carried out by Mr. Braithwaite, of Leeds, the contractor to H.M. Office of Works.

To-morrow (Saturday) afternoon, at 3.30, Sir Edward Clarke will open the public library given to the parish of Camberwell by Mr. George Livesey, the chairman of the South Metropolitan Gas Company. The building is situate in Old Kent-road, and has cost upwards of £6,000.

Engineering Notes.

New York.—A Bill to authorise the construction of a tunnel under New York Bay, connecting Staten Island and Long Island, has been introduced into Congress, the object of the tunnel being to give the trunk lines now centring on the Jersey shore a Brooklyn terminus. The tunnel would cross New York Bay at its narrowest point, and be about two and a half miles long, but the whole route of the new railway would be about six miles in length. The water in the bay is only 35ft. deep at its deepest part, and the formation nearly all the way is believed to be a hard soapstone, which is easily worked, but would not require much artificial support. The estimated cost of the work is about 1,250,000dol. per mile, or 6,000,000dol. in all.

CHIPS.

The last portion of the widening of Fenchurch-street will shortly be completed by the setting back of 171, 172, and 173 to the line of frontage of the London and South-Western Bank and 65, Gracechurch-street, in accordance with arrangements with the Commissioners of Sewers. The works are being executed by Mr. Nightingale, of Albert Embankment, under the superintendence of Mr. W. Seth Payne, of Bishopsgate-street Without.

The rural sanitary authority of Uttoxeter have decided to offer two premiums, of £30 and £20 respectively, for the best scheme for dealing with the water supply of the town.

Mr. Diggle, in his annual address to the London School Board, mentioned that last year the repairs to London Board schools cost £4,500, an increase on the previous year of £1,500, while during the current year £2,500 would need to be spent on a single school.

At the last meeting of the Tamworth town council, Mr. H. J. Clarson, surveyor to the Rural Sanitary Authority, was, after some opposition, appointed inspector of nuisances and surveyor of the borough, at a salary of £125 per annum. The grounds of the opposition were that it was desirable that the Corporation should have the entire services of a surveyor, and that difficulties might exist in the way of one person satisfactorily acting for the rural and urban authorities.

A statue of St. Mary the Virgin and Child has been placed in a niche in the south aisle of Marytavy Church, Devon. Mr. Harry Hems, of Exeter, was the sculptor.

The restoration of St. Michael's Church, Stone, Staffs, has just been completed by the increase of the peal of bells from six to eight. The additional bells were cast by Messrs. Taylor and Co., of Loughborough, and were first rung on Sunday.

The governors of the Birmingham General Hospital decided on Friday to erect new buildings on a more convenient site at a cost of considerably over £100,000.

The foundation-stone of the Coatbridge Technical School and West of Scotland Mining College—the first of the kind erected in Scotland by the aid of a grant from the Science and Art Department—was laid on Saturday with full Masonic honours by Sir Archibald Campbell, M.P.

The Bill which the Dover Harbour Board have decided to apply for to enable them to construct a deep-water harbour outside of the present docks will be an amendment upon powers obtained in 1882, and never acted upon. Covered docks will be constructed in deep water for several mail steamers. The area to be inclosed between the Admiralty Pier and the new eastern pier will be about 70 acres.

An illuminated address and a purse of £150 were presented on Saturday to Mr. John Gough, for the past fifteen years curator of the Birmingham Municipal School of Art, on his resigning that appointment.

The exhibition of the Royal Cambrian Academy at Plas Mawr, Conway, which will close on Monday week, the 27th inst., has been an unqualified success this year. It has been viewed by upwards of 10,000 visitors, and 56 pictures have been sold for £1,058 11s.

The Haberfield almshouses at Hotwells, Bristol, are now being completed. They have cost £10,000, and have been built in the Queen Anne style from designs by Messrs. Pope and Paul, by Mr. W. H. Cowlin, also of Bristol. Provision is made for twelve aged men and twelve aged women in a two-story terrace of houses 220ft. in length, and having gardens in front and rear.

A large warehouse has just been finished in Wellington, New Zealand, for Messrs. Sargood, Son, and Ewen, from the designs of Messrs. Sulman and Power, of Sydney, N.S.W. It covers an area of about 9,240ft. and is 45ft. high.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLI., XLIX., L., LI., LIII., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—J. K. and Co.—F. and B.—H. and E.—V. B. and Co.—S. B.—A. L. B.—R. B. and Son.—J. D.—J. E. and Co.—C. E. and S.—J. A. and S.—F. W. and Co.

J. E. S. (First query inserted. As to books, write B. T. Batsford, 52, High Holborn; he will recommend what you want, and in most cases at second-hand prices.)

Correspondence.

WHITEFIELD CHAPEL COMPETITION.

To the Editor of the Building News.

Sir,—The greatest importance should be attached to the questions raised in your journal on the above-named competition. Much money, time, and anxiety have been expended by the competitors on the faith of instructions issued to them, and although, personally, I have not the smallest concern in the result, I should like to be permitted to make a few general observations on this particular competition, which apply also, to my mind, to all competitions.

Prof. Roger Smith's report, judging from the extract which appeared in your issue of the 3rd inst., clearly shows that its author has insufficiently grasped the duties of an assessor. He informs us that his decision has been "based upon a compromise"; he very good-naturedly adds that he thinks "it fair to the competitors" to say that it is "virtually impossible" to erect satisfactory buildings for the stipulated sum of £15,000. He commits himself to the astounding remark as regards the design "Hearing and Seeing," that "the architects definitely estimate this building at £15,000; but I consider that in this design the desire for economy has led the designers to lower the quality, both of the exterior and of the interior, below that which so important an undertaking requires." He still further takes away one's breath by saying, with reference to "Red Cross," that, although the author of that design has extended the frontage beyond that laid down by the plan issued to competitors, the Professor considers that in so doing the architect has not infringed the "spirit" of the instructions issued; and, having so liberally

dealt with "Red Cross," he extends his consideration to "Winged Heart," who has also occupied more space than the plan issued to competitors shows. The Professor then pats "Wisdom, Strength, and Beauty" upon the back for having estimated the cost of their building at £20,000, and not putting it down at £15,000, and proceeds with a remark which, for an assessor, is, I think, unique: "I consider, however, that its costly nature, its departure from the programme, and other reasons, practically render it impossible to entertain it." Will Prof. Roger Smith honour me by permitting me to share the delight of his profound conclusion, based as it is upon such worthy and excellent reasons? I can only hope that the R.I.B.A. will have the above-quoted opinion emblazoned in letters of gold, to be held up to all future assessors as the embodiment of just conclusions for rejecting a competitive design.

Well, Sir, having given the committee a taste of his groundwork, the Professor gives them his advice. He awards the first prize to the gentleman who has "occupied more space next to Tottenham Court-road than the plan issued to competitors shows" (to quote the Professor's own words); and as regards cost, he informs his employers that "the author estimates the design at £15,000," but does not tell us whether or not he, as an assessor, checked that estimate in any way beyond the cubing process which he himself states is "not always very safe as a guide to the actual cost of any one building." Neither does he extend to "Winged Heart" that rebuke for putting the price at £15,000 which should follow the commendation he awards to "Wisdom, Strength, and Beauty" for not putting it down at £15,000.

All this is, to my mind, exceedingly unsatisfactory. I believe, in opposition to the views expressed in your leader of last week, and also in direct antagonism to those stated in Mr. J. M. Brydon's letter, also in last week's issue, that there is only one leading duty of an assessor, and that is, after selecting the designs to which he proposes to recommend that the prizes be given, to set himself strenuously to work to see that their authors have complied in the strictest possible way, in every particular, with the instructions issued, and the very essence of such compliance should be *cost*. It is not the duty of the assessor, as he did not fix the limit of cost, to concern himself further than to ascertain whether or not the design submitted can be executed for the stipulated sum. Does he not see that if this sum is to be movable, the man who moves it can furnish a far more taking building than he who has deprived his design of attractive features in order to keep his building within the specified amount? If Mr. Brydon chooses to enter a competition for a building, the stated limit of cost of which is inadequate, to his knowledge, he should so inform the committee, and retire on that ground, and not finish a design—beautiful though his design undoubtedly would be, which he knows cannot be carried out for the money in hand—in the hopes of catching an assessor asleep and carrying off the prize! He does but scant justice to his fellow competitors, and perhaps brings serious embarrassment to those who have to provide the funds. But if cost is the essence, as I say, of the instructions, what is to be said of the competitor who absolutely designs a building—so far as his only authority goes—which occupies a greater area than the building site affords? "Goth" ingeniously provides for the Professor a way out of the dilemma; but even if there is an error in the plan issued to competitors, which has not yet, I think, been demonstrated, what is that to the competitors? They have all received the same dimensions, and I presume that if the committee give the frontage to Tottenham Court-road as 102ft. they mean 102ft., not 108ft.! Why did not "Winged Heart" and "Red Cross" work on £20,000, and say that the committee meant £20,000, although they stated £15,000? A great deal more I could say on this serious matter for architects and for the public, but that you, Sir, will probably think I have occupied enough of your space, and I will therefore conclude by expressing the hope that the R.I.B.A. will seriously take this Whitefield Chapel Competition in hand; it is a subject pre-eminently worthy of its attention. It would, in so doing, fulfil one of its real functions—the furtherance of all that tends to raise to a high standard professional practice in every form. But if the Institute will not move in the matter, then I trust that the competitors will: that they will obtain counsel's opinion as to the legality of the award, and proceed as counsel may direct, and my guinea—as I am sure that of hundreds of others will be—is at the disposal of any committee who determines to test once for all in a court of law whether the conditions upon which architects enter upon a competition are or are not binding upon all parties, and whether a violation of those conditions by a committee renders it liable to actions for damages by all those who have been losers by the breach.—I am, &c.,

Wm. Woodward.

7, Duke-street, Adelphi, Oct. 14.

HOUSING OF THE WORKING CLASSES ACT, 1890.

Sir,—In my letter which appeared in your issue of last week, attention was directed to those clauses of the Act more especially relating to dilapidated and insanitary dwelling-houses, and to the provisions by means of which *four* or more *householders* may initiate legal proceedings against owners; but with regard to "unhealthy areas" the conditions are somewhat different: in these cases *twelve* or more of the *ratepayers* are requisite for the formal complaint (to the medical officer of health) that the narrowness, closeness, and bad arrangement, or the bad condition of the streets and houses, or groups of houses, within a district or area, or the want of light, air, ventilation, or proper conveniences, or any other sanitary defects, or one or more of such causes, are dangerous or injurious to the health of the inhabitants either of the buildings in that area or of the neighbouring buildings.

A recent confirmation of the necessity of at once applying the powers of the Housing of the Working Classes Act, 1890, is contained in a reference to the Local Board of Works (St. Saviour's) by a writer who puts the matter thus:—"I ask Mr. Sinclair why his Board have repeatedly refused, on the recommendation of their sanitary committee, supported by their medical officer of health, to appoint a second inspector of nuisances for their large district; their sanitary committee have reported to the Board that it is quite impossible for one inspector to do all that is required, and if a second is not appointed the house-to-house inspection must be neglected. Does this look as if the board have the sanitary state of the district, or their own interests, at heart? Mr. Sinclair is an able and enlightened man, and while kindly trying to shield his brother-vestrymen, is well aware that there are many places in his district as bad, or even worse, than the place described."

The Charity Organisation Society has reported several insanitary areas, and is bringing before the public authorities much valuable information tending to aid and confirm both householder and ratepayers in their representations concerning the conditions under which many are compelled to exist.

In the Greenwich Police-court yesterday, a property-owner was summoned for disobedience to an order of a magistrate to close four houses unfit for human habitation. The order was made so far back as in March last. The defendant was fined £20, with an alternative of two months' imprisonment, the magistrate saying that there was a law which hit landlords like the defendants: "He was the sort of man they wanted to catch—men who kept houses unfit for human habitation where poor people had to live, and where they contracted fevers."

Under the new Act, only three months will be allowed even for the demolition of unsanitary premises, a closing order must be obeyed after seven days, and no such delay as the foregoing would be permitted.—I am, &c.,

Oct. 15. George H. Bilby, F.R.I.B.A.

COPYING DRAWINGS TO A REDUCED SCALE.

Sir,—The following method of copying a drawing to a scale $\frac{1}{m}$th of the original scale by means of an easily-constructed geometrical diagram, suggested itself to me some years ago. Since then I have simplified the process, and I now offer it to your readers as one which may be found useful to mechanical and architectural draughtsmen—at any rate, in the absence of proportional compasses. Indeed, when m is less than 3, working with a diagram is at least as easy as working with the clumsy instrument just named, and the results are as accurate, supposing the diagram to be carefully constructed.

In Fig. 1, let A and B be fixed points in a piece of cardboard or thick drawing paper, and AP, BP, any two lines drawn from them and meeting in P. Then, if in all cases $AP = m \cdot BP$, the locus of P is a circle whose centre (T) is on AB produced.

To prove this, draw PN perpendicular to AB, or AB produced. Let $BN = x$, $NP = y$, and

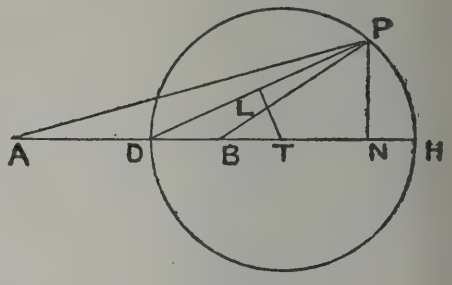


Fig. 1.

consider the length of AB (the *base*) as representing unity. Then—

$$y^2 + (x+1)^2 = m^2\,(y^2 + x^2)$$

from which we derive—

$$y^2 + \left(x - \frac{1}{m^2-1}\right)^2 = \frac{m^2}{(m^2-1)^2}.$$

This is the equation to a circle. $BT = \frac{1}{m^2-1}$, and the radius $TP = \frac{m}{m^2-1}$. By giving to m different values, we can calculate the corresponding values of BT and TP. Thus, if $m = \frac{\sqrt{3}}{\sqrt{2}}$, which is the ratio used in isometric projection, it will be found that $BT = 2$, and $TB = 2{\cdot}45$. If $m = \frac{3}{2}$, $BT = 0{\cdot}8$, and $TP = 1{\cdot}2$. If $m = 2$, $BT = 0{\cdot}33$, and $TP = 0{\cdot}67$, &c. The difference between the shortest length, AD, that can be taken on the original drawing and AH, the longest, decreases as we increase m, and it is easily shown that the range of the instrument, in its most simple form, is expressed by the formula—

$$AH = \frac{m+1}{m-1} \cdot AD.$$

In practice it is rarely necessary to calculate numerically the lengths BT and TP, for by a simple geometrical construction we are enabled to produce a diagram to any ratio m, given two lines whose lengths are in that ratio. Thus, suppose AB to be a suitable length for the base, and AP to equal $m \cdot BP$. Bisect the angle APB by the line PD. Then, since, by Euclid VI. 3.

$$AD : DB :: AP : BP$$
$$\therefore AD : DB :: m : 1,$$

which shows that PD is a chord of the required circle. Bisect PD in L, and draw LT perpendicular to PD. Evidently T, since it lies on both LT and AH, must be the centre, TP being the radius. Describe the circle, and the diagram is complete.

The mode of using the diagram requires little explanation. A length AP, from the original

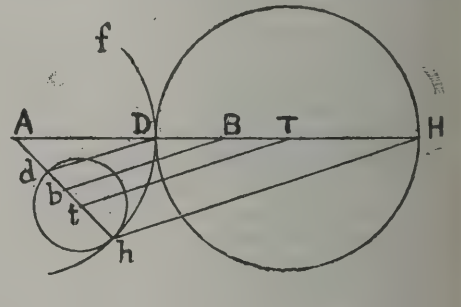


Fig. 2.

drawing, being set off with ordinary compasses from A, determines the position of the point P, and we take PB for the corresponding length in our copy. To prevent their being holed by compass points, A and B ought to be protected by horn centres.

For any measurement shorter than AD, when it cannot be taken indirectly (that is, as the difference between two longer measurements), a supplementary circle, constructed to a shorter base than AB, is required. In the diagram, Fig. 2, from A draw any line, Ah = AD, the shortest of the

measurements; join H h, and through T, B, and D draw lines parallel to H h, meeting A h in t, b, and d respectively. Then, A b is the new base, and t the centre of its circle, of which the radius is t d. Supposing A B to be of sufficient length, a third circle and base can be derived from the second, a fourth from the third, and so on; and it is easy to see—since the two circles in the figure are tangential to the arc f D h, described from A as a centre with the radius A D—that any measurement found on one circle cannot be found on any other, and therefore that no doubt need occur as to which base a measurement applies. When there are but two circles and bases, as in Fig. 2, since A h = A D, we have—

$$A D = \frac{m+1}{m-1} . A d,$$

and

$$A H = \frac{m+1}{m-1} . A D,$$

$$\therefore \quad A H = \left(\frac{m+1}{m-1}\right)^2 . A d.$$

In practice more than two circles are rarely required; but if we had n circles, and l and s were the greatest and least measurements within the range of the instruments, then—

$$l = \left(\frac{m+1}{m-1}\right)^n . s.$$

—I am, &c.,
Charing, Kent. J. R. C.

Intercommunication.

QUESTIONS.

[10409.]—**Drying Bricks.**—I shall be grateful if any of your numerous correspondents will give me the benefit of their experience as to the best and cheapest mode of drying machine-made wire-cut bricks made of strong clay previous to putting them into the kiln. Is the system of flues heated by means of coal or steam preferable? And what is the best means of constructing flues and floor, and what is the cost?—C. H.

[10410.]—**A Difficulty.**—I am the architect for a job of which my client is acting as clerk of works, and, being a builder's merchant, supplies most of the materials. On my last visit I was surprised and annoyed to find that the builder had set all the arches over window openings which have a 9in. soffit in two thicknesses, so there is now a joint to be seen all around the soffit 4½in. back from face of arch. As there is a good bit of work over, my client says he will not have them altered. Will any correspondent kindly suggest the best thing I can do under the circumstances? It has occurred to me that the soffit might be stuccoed.—Querist.

[10411.]—**A Builder in a Difficulty.**—Having lately started in the building trade, and being a joiner by profession, I have had a very fair run of work, and having good credit, was being well backed up by the trades connected; but in an unlucky moment I was tempted to take a lot of houses on the same ground as I was working on on another contract, and being so much engaged myself I left the estimating of this to my son, who was thoroughly up in it, and having got it, all went on swimmingly till we got nearly up to the first floor of joist, so as to get the stipulated first instalment; but having got a little more time on my own hands, I began to look over the estimate, and found a mistake of some £300, and being pressed a little for the month's accounts, I determined to go on and get the instalment before taking any steps; but having to stack the flooring, the merchant with whom I dealt had not a part of it in stock, but laid down all the rest, and on account of not having the agreement fulfilled to the letter, the owner refused to pay the balance of instalment then due, although opposite the deficiency in the floorings there was some £25 of extras in foundations, and I therefore had to shut shop, as they say, and he (the owner) now refuses to allow me anything—not even my scaffolding; and what I would like to know is if I have any remedy, or if any of your numerous readers know of a similar case, and how it was dealt with. I have a great many back numbers of Building News, and have searched them through, but cannot find anything like it, or rather report of anything like it. There is about £450 of work and material done, I have received £245, and the instalment was £350, as per agreement. By the way, I should mention that there is no clause in the agreement about the material being the property of the owner when laid on the ground, and I consider it very hard to give away all my labour, and tools as well besides, when I was so nearly up to the terms of the agreement—in fact about £15 worth of flooring would have made me fully entitled to it; but I preferred waiting till they had it in the place I was in the habit of dealing. Early advice from some of your numerous correspondents would much oblige.—Perplexed.

[10412.]—**Geometrical Problem.**—Can some reader, more skilled in mathematics than myself, give me the solution to the following problem in "Euclid," Book I. A B, A C are two straight lines, B and C given points in the same; B D is drawn perpendicular to A C, and D E perpendicular to A B; in like manner C F is drawn perpendicular to A B, and F G to A C. Show that E G is parallel to B C.—J. E. Smale.

[10413.]—**Lettering.**—In lettering stone or marble, where it is desirable to have the sunk letters filled in with black or red sealing-wax as more durable than painting same, and if for greater permanency, to have the dovetailed grooving run full with molten lead—what is the best way to bring the wax or lead to a smooth face with the stone or marble surface?—Tolop.

[10414.]—**Signing Contracts.**—Is it necessary that both employer and contractor sign the documents, or is it binding if the contractor's signature is put to it, and witnessed? When a contract is signed on behalf of a firm, is the signature of one member or a manager on their behalf sufficient, or should each member sign separately.—Teachable.

REPLIES.

[10366.]—**Enforcing Completion of Contract.**—I am disappointed no one has answered this question, as the matter is becoming grievous, all being at a standstill; the contractors, on the one hand, threatening that if the work is not measured off and a statement made by the architect, proceedings will be taken; the proprietor, on the other hand, saying he is prepared to pay balance when the work is completed by contractors, who resist, stating they will do no more, having, as they think, finished, the matters required being only trivial, and as their workshop is a considerable distance from the building, parties close at hand can do the little matters cheaper, and they are willing the amount should be debited at contract rate. The employer holds, however, that the contractors are bound to carry out their contract themselves, and as a question of right he is determined they shall do so, or he will not pay until forced. What course should the architect take in this case under the circumstances?—Perplexed.

[10382.]—**Altar Rail.**—It is worth something to know that the chancel "A. H." is concerned with is 19ft. by 40ft. In that space he can seat a choir of 30 with two priests, and have twelve steps to foot-pace, or fourteen if two may be projected towards nave; and perhaps a passage next the wall as well, nothing being pinched. In seating a narrow chancel it is desirable to bear in mind that 6ft. is not too much for men's and boys' benches, because in half-turning for creeds, &c., and walking in and out less than a foot is certainly insufficient. Place the chair in front of the table and turn round so as to walk between them, and it will give way so as to leave a space of 13in., and probably 14in. would be a safer width, even if the seats had to be pinched a little to compensate. Where there is lateral access to chancel, the position of altar rail hardly becomes an open question.—H. W.

[10392.]—**Okehampton.**—There are two churches at Okehampton. All Saints is the parish church; it stands on a bold eminence half a mile or so away from the town. The ruins of the old Norman castle, built by Baldwin de Briony—also called De Redvers and De Ripariis—the lord of two hundred manors, and in William the Conqueror's time the greatest landholder in Devon, are not far off. The castle crowns an abrupt wooded knoll close by the river Ockment. It also contained a chapel, of which remains still exist. The other church is St. James's Chapel-of-Ease, standing in the middle of the principal street. The church itself is modern (built 1862); but the Early Perpendicular tower, embattled and pinnacled, although all that is left of the original edifice, has interesting features. It is this that "J. E. P." asks a query upon in the Building News for Sept. 26th. Curiously, the parish church, like the chapel, only retains its original western 15th-century tower. The former edifice was consecrated by Bishop Bronescombe (c. 1257—91); but the body of the structure was totally destroyed by fire on the 13th of February, 1842, and soon after rebuilt from the designs of Mr. John Hayward, of Exeter. Not many years ago the solitary tower of St. James's, Okehampton (spelt variously Oakhampton, Ockington, Ockmentune, Ockmenton, &c.), served as a lateral support for a butcher's shop! The place was originally a chantry, but was afterwards given to the corporation by one of the Courtenays. It is now in the hands of the Charity Trustees. Risdon, in his "Survey of Devon" (he died A.D. 1640) thus refers to the two churches:—"Oakhampton was lately graced with a mayor, by the bounteous favour of King James the First—in which there is one chapel—the church standing somewhat remote, as if it were banished, without comfort or company." Dr. Oliver, D.D., a learned, painstaking local antiquary, in his "Ecclesiastical Antiquities of Devon" (1839) thus refers to Okehampton, but whether to the St. James's within the town, or the parish church without, is not clear. He writes:—"Okehampton.—On a tablet affixed to the south wall of the church—'Here under lyeth Thomasin Godolphin, the wife of Thomas Peter, Gentlem: who Dyed the ix of September, 1608.' On each side is a shield. That on the right Petre of Wiscombe and Godolphin, party per pale; that on the left Godolphin and Grenville, party per pale. Mrs. Petre kneels on a cushion before a desk with a book in her hand. Behind her, on the pavement, which is well engraved, kneel her three daughters. Beneath is the following inscription—

"She was to God and husbande trewe,
A mirror of all wyves to viewe;
The poor, the lame, sicke, and needy
She did releeve most liberally:
She lyved so good and Godlye life,
As never wronged man, maide, nor wife,
And made so good and Godlye ende
As none the same on earth may mend."

The Rev. F. C. Hingeston-Randolph, who has already reproduced the registers of several of the early Exeter Bishops—viz., Bronescombe (A.D. 1257-80); Quivil (A.D. 1280-91); Bytton (A.D. 1292-1307); Stafford (A.D. 1395-1419)—and is still engaged on the stupendous work, does not quote many references bearing upon the ecclesiastical history of Okehampton. There is, however, an entry in the Bp. Bronescombe Register: "Okehampton (Okemptone and Ochamtone MS.), vicars of: Adam occurs 6 April, 1267-36; Sir William de Winkelege, priest, was inst. 22nd February, 1277-8; patrons, the Prior and Convent of Cowick." And in Bishop Stafford's Register there is mention: "Okehampton (Okhampton MS.), Vicars of: Richard Yestbrook; on whose death was inst. 17th Dec., 1413; John Newecum, Chaplain. Patron: K. Henry VII. 154." And again, in the same Register: "Okehampton, Richard (Estebrok) V. Penitentiary in Deanery of Okehampton, i. 50; his will i. 321. John Newcombe V. ii. 292, Penitentiary i. 194, 207, 217, 231, 237. Okehampton and Cowick. Ordinacio concerning, by Bishop Stafford. The Bishop sets forth that between the Prior and Monks of the Parish Church of Okehampton (Okhampton alias Okementon) on the one part, and John Newcomb, Vicar, thereof, on the other part, grave differences had lately arisen, touching the repairs of the chancel and the provision of office books therein, and the said Prior, &c., by their proxy, John Hethfield, Chaplain, and the said Vicar in person had appeared before him at Clyst, 3 June, 1417, and had stated their case, the former alleging that by Bishop Briwere's Ordinacio, and by custom, the Vicar was liable, and the said vicar maintaining the contrary view. With the consent of both parties, the Bishop settled their differences thus: The said Vicar and his successors were to keep up both the chancel and the office books; and by way of compensation, it was agreed that in the case of any subsidy to be paid to the Vicar, and in the case of procurations, payable by him on account of Archiepiscopal and Episcopal visitations, the Prior, &c., should pay one entire moiety of the same. Also the Prior and Convent agree to remit 6s. 8d. per annum out of an annual pension of two marks, payable by them to the Vicar, reducing the said pension to 20s. per annum. This settlement the Bishop declares to be just and fair, and he confirmed the same accordingly." Bishop Briwere's Ordinacio, mentioned above, is quoted in full, granting to the Prior and Convent of Cowick the church of "Okementon," and the chapel in the castle there, with the consent of Courtenay (de consensu de Cortenay, veri patroni), reserving to the Vicar all the obventions of both the glebe (sanctuarium), and the court and buildings thereon, and the tithes, great and small, therefrom; save that the Convent was to enjoy the tithes, garbarum, both of the whole parish and of the tenants of the glebe, together with a suitable space adjoining the Vicar's Court, and a barn; with two silver marks yearly at Michaelmas. The vicar was to be liable for omnia onera debita et consueta Episcopalia, etiam Archidiaconalia, dictam ecclesiam et dictam capellam contingencia (these were the disputed words), and to provide for Divine Service daily in the said chapel. It was dated at Exeter, die Martis, in Easter week, 1239 The date of this Ordinacio was as given above at Clyst, &c. The Prior, &c, signed it on 7th June, in their chapter house; the vicar, at Clyst, on the same day ii. 292b, 293b.—Harry Hems.

[10402.]—**R.I.B.A. Exam.**—I should be inclined to interpret the words "Geometrical Drawing" somewhat liberally, and submit a measured drawing from a few panels in a 15th-century tomb, full size, or something similar. Probably a copied drawing of one of the stereotyped "Orders" would suffice; but I should advise, in preference, a measured section through the Parthenon entablature, obtained in the British Museum—Elgin Room—and drawn to ½ or ¼ full size.—G. A. T. Middleton.

[10403.]—**Strength of Pipes.**—For iron pipes cast vertically, where—

t = required thickness in inches.
d = diameter in inches.
n = head in feet divided by 33.
Formula, $t = (\cdot 0916\ n + \cdot 013)\ d + \cdot 32$.

Pipes should be tested to three times their working pressure, and to never less than 300ft. of head.—N. D.

[10404.]—**Rise of Water in Basement.**—Dig out clay round walls down to footings and return it well puddled, or render outside of brickwork with cement. Take up wood floor, and (having excavated deep enough, if necessary) lay down at least 6in. of good fine cement concrete, which should be rendered with neat cement all over before the concrete stiffens. Where concrete joins walls all round, take care to well clean and damp the brickwork and rake out joints. The wood floor can then be replaced, or the concrete floor may be made higher and tiled over.—N. D.

[10405.]—**Levelling.**—You should consult recent works on surveying and makers' catalogues. For general use, you would find a 14in., without compass, the handiest, and as to make, I prefer Stanley's Tribach Levels, which have several improvements.—M. D.

[10405.]—**Levelling.**—The side sights to Harling's levels are now and then of great advantage; but it may be generally said that any instrument by a good maker may be relied upon. Personally, I prefer four to three levelling screws, and one vertical hair to two; but these are only personal predilections, and are not shared by everyone. Test the definition of your lenses before purchasing.—G. A. T. Middleton.

[10406.]—**Sash Fastening.**—Has "A. Z." seen the screw fastener, which consists of an ornamental milled-headed screw, working in threaded sockets placed horizontally in the meeting bars? It looks well, when fixed, keeps windows from rattling, is easily worked by people with delicate fingers, and cannot well get out of order. I forget maker's name, but any ironmonger will tell you.—M. D.

[10407.]—**R.I.B.A. Exam.**—"Anxious" was unwise to enter for the Prelim. at all. He should have waited and presented himself for the Associates' Exam. next March. He ought now to lay his case fully before the Council, and ask to be allowed to attend in March, on submitting the usual probationary works; and his request can scarcely be rejected, as he will be able to comply with all the conditions. In the mean time, he should be working hard, attending either my lectures, those at King's or University Colleges, or those conducted by Mr. Farrow, reading by himself under guidance, making his probationary drawings, and, when possible, measuring and sketching from old works. No sudden cramming will get a man through the R.I.B.A. Exam. He must study thoroughly, and for a considerable period.—G. A. T. Middleton.

The Lord Mayor, accompanied by the Sheriffs of London and Middlesex, opened, on Tuesday, the new municipal hall and free library at Newcastle-under-Lyme. The building has been erected at a cost of £15,000, from designs by Messrs. Sugden and Son, Blood, and Snape. It includes a council chamber, a school of art, a public reading-room and library, and a large assembly-room.

The Mansfield Commissioners have lately purchased the undertaking of the Mansfield Water Company, which was promoting a provisional order for the purpose of obtaining powers to augment its supply. The Commissioners are now acting under the advice of their engineer, Mr. George Hodson, M.Inst.C.E., making trial borings on the site selected, which have already led to an abundant supply of pure water.

LEGAL INTELLIGENCE.

Re George Wall.—A first meeting was held before the Official Receiver on Friday. The debtor was a builder and contractor, carrying on business in Carlton-road, Kentish Town. His gross liabilities are returned at £25,360, of which £13,088 are unsecured, and the assets are estimated at £4,462. The London School Board make further claims for £13,000, which the debtor repudiates, and actions are pending in respect of the same. Mr. E. H. Collins, accountant, was appointed trustee of the estate, together with a committee of inspection, resolutions for bankruptcy being passed.

Ancient Lights and Crown Rights.—(The Mercers' Company v. Eames—Salaman v. Eames — Perry v. Eames.)—Applications were made before Mr. Justice Vaughan Williams on the 9th inst. to restain interference with ancient lights claimed by the Mercers' Company, as the freeholders, in respect of Gresham-buildings and Nos. 9 to 12, Basinghall-street, on the east side of the street. It appeared that the defendant was erecting buildings on the opposite side of the street, on the site of the old Bankruptcy Court, of a height of 14ft. higher than that of the old buildings, raising the height from 50ft. to 64ft. in a street only 25ft. wide. The defendant contended that, the Bankruptcy Court having been Crown property from the year 1820 to 1884, the plaintiffs could not claim any prescriptive rights against persons claiming under the Crown (2 and 3 William IV., c. 71, sections 2 and 3). The plaintiffs, on the other hand, maintained that the property had never vested in the Crown, but in trustees, and cited the provisions of the Act 1 and 2 George IV. section 115, under which the Bankruptcy Court was built, and sections 1, 2, and 3 of the Prescriptions Act, 2 and 3 William IV., c. 71. After considerable argument as to whether the property was ever really vested in the Crown or not, it was arranged that the motion should stand over till the second motion day of next sittings, the defendant undertaking to abide by any order the Court might then make with respect to pulling down any part of the buildings erected from this date, and which should, in the judgment of the Court, substantially obstruct the ancient lights of the plaintiff.

Sequel to a Builder's Bankruptcy.—At the Longton (Staffordshire) County Court, on Tuesday, the 14th inst., Mr. J. E. Moxon, solicitor, Hanley, brought an action against Mr. Wood, of the firm of Steele and Wood, earthenware manufacturers, Stoke-on-Trent, to recover from him the sum of £50, being £30 on account of the plainttff being wrongfully deprived of a mortar-mill, and £20 as damages. On April 19th Mr. Barlow, son of a builder at Stoke-on-Trent, called upon the plaintiff to borrow £25, saying that he was short of money with which to pay his firm's workpeople. Mr. Moxon refused the loan, but ultimately agreed to purchase from him a mortar mill for £25. On April 21st a summons was issued against Mr. Barlow, sen., for £17, by Messrs. Steele and Wood, and on the 23rd the case came before his Honour at the Longton County Court. On the same day, however, a bankruptcy petition was presented against Mr. Barlow, and so the County Court action was restrained until the conclusion of the bankruptcy proceedings. On May 14th, Barlow was adjudicated a bankrupt. The £25 which Mr. Moxon had paid for the mill went towards the bankrupt's estate. Whilst negotiating for the fixtures for the mill Mr. Moxon heard that the mill had been sold by auction on the instructions of Mr. Wood, the defendant. The latter paid £13, value of part of the mill, into Court, with a denial of responsibility in respect to the whole. Cross-examined, the plaintiff said he did not know the mill was incomplete when he bought it. A large portion of it ultimately came into the hands of the auctioneer, Mr. Wilde, who bought it from the Official Receiver. Mr. Wood admitted having sold one part of the mill by mistake, but contended that he was not liable for the conversion of the whole, as part of it had been sold by the Official Receiver to Wilde.—His Honour held that Mr. Wood, having authorised Wilde to sell part of the machine, rendered himself liable for the conversion of the whole, although he might have a claim against Wilde for a portion. His verdict must be for the plaintiff, for £30, with costs.

The iron opening bridge built at Goole, near the confluence of the Dutch River (cut by Sir C. Vermuyden), over the river Ouse, is now completed. The Manchester, Sheffield, and Lincolnshire Railway Company have built it in place of the old wooden structure that stood where it now stands. The cost of the bridge is £9,752.

A statue of Lessing, the literary Luther of the 18th century, was unveiled in the Thiergarten at Berlin on Tuesday. It is of marble on a granite pedestal, and was executed by Professor Otto Lessing, grand-nephew of the poet.

WATER SUPPLY AND SANITARY MATTERS.

Duffield Waterworks.—At the request of the Belper Rural Sanitary Authority, Mr. W. H. Radford, C.E., of Nottingham, has sent in alternative schemes for waterworks at Duffield, and they are now under consideration. In one scheme Mr. Radford proposes to take the water from the Hazlewood Spring, and store it in a service reservoir, and supply by gravitation, any future deficiency being made good by putting down the pumping station mentioned below. In the alternative scheme, Mr. Radford proposes to pump river water from alluvial deposit, after natural filtration through sand and gravel, the water being pumped into a summit reservoir to command the district.

CHIPS.

A meeting of the congregation of the Chapel Royal, Savoy, was held on Wednesday, for the purpose of taking steps to raise a memorial of the late chaplain. A letter was read from Mr. Burdett-Coutts, M.P., offering, on the part of the baroness, to take charge of the erection of a memorial over Mr. White's grave at Brompton, which proposal was accepted on the part of the family. An intimation was also received from Mr. Passmore Edwards of his willingness to found a permanent scholarship at King's College School for a Savoy chorister, or to erect a drinking fountain in the Savoy Precinct on the Embankment. The assistant chaplain (the Rev. W. J. Loftie, F.S.A.) wrote suggesting either such a scholarship or the erection of a choir-house. A representative committee was appointed.

Messrs. Samuel Trickett and Sons, of Victoria Stone Wharf, Millwall, E., desire us to state that, for the convenience of their customers, they have taken City offices at 119 and 120, London-wall, E.C., where in future all communications should be addressed to them.

The building trade in Australasia seems very dull. A circular lately issued to the members of one of the trade societies describes trade as being bad in all centres of population, excepting Wellington, N.Z., and Adelaide. Against these cities the word "moderate" is placed.

The Albert Hall in Shandwick-place, Edinburgh, will be reopened next week, having been entirely redecorated by Messrs. Macfarlane and Wallace, of that city.

Mr. John Newhouse, the head and organiser of the sanitary department of the Leeds town council, has tendered his resignation on account of advancing years. In 1865, while holding the position of police inspector, he was asked by the then mayor to organise a sanitary department; the only officials at that time who looked after the public health being an inspector of nuisances and a smoke inspector, with one clerk. He did so, dividing the borough into twelve sections, and appointing an inspector to each. This scheme worked satisfactorily, and the Local Government Board having issued an order that no police-officer should engage in sanitary work, Mr. Newhouse resigned his office in the police to take up the inspectorship of nuisances. The first medical officer of health was appointed in 1866, and, with the assistance of Mr. Newhouse, the sanitary department of Leeds has grown until it now numbers nineteen district inspectors, two meat inspectors, one smoke inspector and an assistant, one canal-boat inspector, and a dairies and cowsheds inspector.

A Bill was introduced into the Austrian Diet on Tuesday, authorising the creation of a Greater Vienna by enlarging the boundaries, so as to include a number of summer resorts and suburban villages. By this manner the area of the Austrian capital would be increased from 14,000 to 42,000 English acres, and the population from 700,000 to 1,300,000. Of this Greater Vienna only 10 per cent. is at present built on.

In the 1890 report of Mr. Arthur Bell, the engineer in charge of buildings for the Government of New Zealand, we see that £33,175 was spent on Government buildings during the last year. Education being one of the large functions undertaken by that Government, we are not surprised to see that £25,000 was spent on school buildings.

A mill-girls' institute is about to be built in Ancoats, Manchester, from plans prepared by Messrs. Darbyshire and Smith, of that city. The building will be Italian Renaissance in style, and will have a frontage three stories in height, faced with Ruabon red bricks and terracotta. The building will cover an area of 75ft. by 128ft., and will cost about £5,000.

The stone screen erected in Rochester Cathedral as a memorial to the late Dean Scott will be unveiled to-day (Friday). The carving has been executed by Mr. Nathaniel Hitch, of Vauxhall.

Sir Edgar Boehm has just been commissioned to execute a colossal statue of Lord Reay for Bombay.

Our Office Table.

"The Architectural Antiquities of the Isle of Wight," from the 11th to the 18th centuries, is the title of a folio about to be published by Mr. Percy G. Stone, F.R.I.B.A. It will be issued in four parts; the first of these will be apportioned to the East Medine, and the other to the West Medine. There will be over 100 full-page plates, including many measured drawings. The buildings to be represented comprise Quarr Abbey, all the best churches (some twenty-four in number), several brasses and sepulchral monuments, pulpits, panelling, metal-work, chimneypieces, and furniture, as well as views and plans of the manor houses of Arreton, Mottison, Woolverton, Stenbury, North Court, West Court, Yaverland, Sheat, Merston, Chale, Swainston, and Billingham; the Castles of Carisbrooke, Yarmouth, and Cowes. Mr. Stone will publish the work himself to subscribers.

Earl Derby has just presented to the Liverpool Free Museum a very valuable collection of prehistoric implements illustrating the stone and bronze periods of Europe and America. The series consists of 425 specimens, the general collection containing 378 examples, supplemented by 47 very fine neolithic Scandinavian weapons of marvellous workmanship. The palæolithic epoch contains specimens from Norfolk, Suffolk, Essex, &c., as well as specimens from Abbeville, the original locality described by M. Bourcher de Perthes, who discovered in Europe the great antiquity of these weapons and their association in the gravel pits with the remains of the extinct mammoth, woolly rhinoceros, and other prehistoric animals. The collection also contains flint implements from the surface gravels of Surrey, Newhaven, and other well-known English localities. It is, however, in the neolithic or later epoch specimens that the collection is especially rich. There are axes or wedges in polished flint from Denmark, with keen edges; gouges, scrapers, cores, and sacrificial knives or lances all in flint. The collection contains also Irish celts in basalt, a large series of flints in their original horn hafts from the Swiss lake dwellings, celts from France; a series of American wedges, some grooved, as well as flint arrow-heads from nearly every part of the world. The bronze period is also represented by swords, palstaves, knives, and a large series of pins and brooches from the lakes of Neuchâtel and Mörigen. The collection is now being prepared for exhibition by Mr. T. J. Moore, the curator of the Free Museum. The Rev. H. H. Higgins is to lecture upon it at the Philosophical Institute of Liverpool on Monday next.

One injustice to Scotland, against which lovers of art have hitherto ineffectually protested, is about to be remedied, the Board of Manufactures for Scotland having received a communication from Lord Lothian, Secretary for Scotland, announcing that the Government propose to give a grant of £1,000 a year for five years for the purchase of pictures for the Scottish National Gallery. Considering the liberality with which the London and Dublin Galleries have been treated, it is strange that hitherto not a penny for the purchase of pictures has been granted to Scotland, and in consequence many desirable works of art have passed out of the country which ought to have found a permanent home in the National Gallery at Edinburgh. The first £1,000 will be available after April next.

The superiority of Portland cement for anchoring iron bolts has been recently shown in some experiments in connection with the foundations in rock for an elevated railway. Sulphur, lead, and Portland cement were tried for the purpose, holes being drilled in the limestone rock 3½ft. deep, and about 1⅝in. in diameter. With sulphur the bolts showed a strength of 16,000 and 31,000lb.; with lead the results showed the same strength, but the cement gave the highest. Five out of six bolts broke without pulling out; one 1in. bolt began to yield at 26,000lb., but sustained the load a few seconds. A further series of experiments were undertaken to determine the strength per square inch of area. A plain 1in. bolt yielded at 20,000lb., a threaded bolt at 21,000lb. A threaded 2in. bolt yielded at 32,000lb., the strain being slowly applied. These tests go to prove that cement is more reliable and stronger than either lead or sulphur, and that the resistance is from 400lb. to 500lb. per

square inch of surface exposed. Cement also preserves the iron.

In a vigorous letter to the Watford *Observer*, Messrs. Webster and Cannon, of Aylesbury, protest against the recent conduct of the Watford School Board in passing over their tender for the new schools on the Common—although the lowest sent in, and recommended for acceptance by the architect, Mr. Ayres—on the ground that the work ought to be given to local men. They point out that they were put to considerable trouble and expense in tendering, and declare that to accept a tender £190 higher on such a ground is to further protection in its most obnoxious form at considerable cost to local ratepayers. They ask what Watford builders would think if they were so treated at Aylesbury, and show that in that town the contracts for the railway station, post-office, and bread factory were all given to outside firms, and, indeed, it is a common practice all over England. A parallel case appeared in our list of tenders a fortnight since in the action of the Coventry School Board, who, without objection being raised, accepted the tender of Mr. J. T. Wingrove, of Northampton, for their new schools.

By the will of the late Mr. Henry Lammin, who formerly resided at Newark, but who died in London in August, the Nottingham Castle Art Museum receives a valuable addition to its treasures, Mr. Lammin having bequeathed to the institution his collection of paintings and ceramic ware, the value of which is estimated at £4,000. The pictures (about fifty) include examples of Turner, Gainsborough, David Cox, Crome, Stark, Richard Wilson, and others. There are a few large canvases, but most are cabinet works. The decorative objects principally consist of Crown Derby ware and other ceramic works, such as those from Worcester and Swansea. The Crown Derby includes some splendid vases and sets.

On the 10th inst., Mr. John Grundy, of Duncan-terrace, Islington, N., and of Tyldesley, near Manchester, gave his annual entertainment to between 500 and 600 aged persons of both sexes, ranging between 60 and 90 years of age, belonging to Tyldesley and the neighbouring districts. After partaking of a substantial tea, an entertainment was provided for them by ladies and gentlemen friends of the host, interspersed with which were many speeches, not the least of which was that in which Mr. Grundy replied for the hearty manner in which the health of his wife and himself had been proposed. He expressed himself as being very delighted to see so many old neighbours and friends around him, and trusted that he might do so for many years to come at these annual reunions. Mrs. Grundy, he regretted to say, was unavoidably prevented from being present by unforeseen circumstances.

CHIPS.

The new church at Aldborough in the North Riding, built at the cost of the Dowager Duchess of Northumberland, was consecrated last week. It is Early English in style, is seated for 120 persons, and has been built from plans by Mr. W. T. Hicks, of Newcastle-on-Tyne, at a cost of £1,500. Messrs. Ivison and Brown were the contractors.

An oil painting of the late Duke of Buckingham and Chandos, which was on Tuesday presented to the county of Buckinghamshire by the magistrates, has been hung in the dining-hall at the Judges' Lodgings at Aylesbury.

Additions have been made to the head office of the National Provincial Bank of England, Birmingham, and special attention has been paid to the ventilation, which is carried out on the Boyle system, the extraction of the vitiated air being effected by the latest improved form of the self-acting air-pump ventilator.

On Wednesday last a bazaar was opened at Wigan in aid of funds for building the new church of St. Mark, a portion of which is now in progress at a cost of £3,500. Messrs. Heaton and Ralph, of Wigan, are the architects.

The County Council for the West Riding resolved on Friday that a grant of £300 be made to the West Riding surveyor for bringing into force the Local Government Act, 1888, and for additional work in consequence thereof.

At a public meeting held at Dudley on Tuesday night, Mr. Thomas Chatfeild Clarke, F.R.I.B.A., was unanimously selected as the Liberal candidate. It will be recollected that Mr. Chatfeild Clarke unsuccessfully contested Hammersmith in 1885.

MEETINGS FOR THE ENSUING WEEK.

Tuesday.—Manchester Architectural Association. Inaugural *Conversazione* of Session. Athenæum Lecture Hall. 7.30 p.m.
Glasgow Architectural Association. "The Ventilation of Buildings," by W. Paton Buchan. 8 p.m.

Architectural Association, 9, Conduit-street, W.—The Annual General Meeting will be held on Friday, Oct. 17, at 7.30 p.m., when an address will be delivered by the President, and the prizes will be distributed.
Fred. R. Farrow. } Hon. Secs.
Ernest S. Gale. }

Holloway's Ointment.—Glandular swellings in the throat, neuralgia, tic douloureux, rheumatism, gout, lumbago, and other diseases affecting the glands, muscles, and nerves of sensation are permanently eradicated by this healing anti-febrile and soothing preparation. It is also a perfect remedy for all skin diseases, and every kind of superficial inflammation.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

Aberdeen.—For constructing a new lairage for foreign cattle at Pocra Jetty, for the harbour board:—
Dawson, W., Skene-street, Aberdeen ... £1,110 0 0
(Accepted.)

Ashburton, Devon.—For erecting two villas on the Druid Estate, near Row Devon Cross, for the Ashburton Burial Society:—

	No. 1.	No. 2.
Stevens, H. ...	... £820 7 3	... £820 7 3
Foaden, H. ...	... 625 0 0	... 645 0 5
Pomeroy, J. (accepted)	507 8 6	... 510 10 0

All of Ashburton.

Birmingham.—For hotel, 16 shops, and offices, Corporation-street, for the Birmingham Exhibition Hall, Winter Garden, and County Hotel Company, Ltd. Messrs. J. P. Sharp and Co., Martineau-street, architects:—

Fell, J.	£27,650 0 0
Lovatt, H.	25,367 0 0
Parnell, J., and Son	24,840 0 0
Willcock, H.	24,3 0 0 0
Robotham, T.	23,900 0 0
Gowing & Ingram, and Parker, J., both of Birmingham (accepted)	23,000 0 0

Birmingham.—For Exhibition Hall and Winter Garden, Old-square, for the Birmingham Exhibition Hall, Winter Garden, and County Hotel Company, Ltd. Messrs. J. P. Sharp and Co., architects:—
(Exclusive of steel roof.)

Lovatt, H.	£12,500 0 0
Parnell, J., and Son	11,713 0 0
Robotham, T.	11,700 0 0
Gowing & Ingram and Parker, J., both of Birmingham (accepted)	11,325 0 0

Birmingham.—For warehouses, &c., Station-street, for Messrs. C. F. Marlow and Co., wine merchants. Messrs. J. P. Sharp and Co., Martineau-street, architects:—

Robotham, T....	£2,875 0 0
Webb, W. and J.	2,871 0 0
Briley, F. J.	2,830 0 0
Gill, G.	2,780 0 0
Webb, J.	2,765 0 0
Parker, J.	2,700 0 0
Bowen, J.	2,699 0 0
Giles, E.	2,625 0 0
Whitehouse, B.	2,623 0 0
Harley, J., and Son	2,590 0 0
Gowing & Ingram, 133, Belgrave-road (accepted)	2,545 0 0

Bournemouth.—For the addition of a tower to St. Clement's Church:—

	£. A.
Hoare	£4,145 ... £2,273
Bone	3,958 ... 2,093
Jenkins and Son	3,630 ... 2,120
Merrick and Son	3,491 ... 1,700*

* Accepted.
A.—To build tower as high as the bottom of the belfry windows only.

Bristol.—For constructing the foundations of a refuse destructor to be built in St. Philip's Marsh, for the city council:—
Durnford, J., and Son (accepted)... £1,616 10 3

Bristol.—For executing works of pitching carriageways throughout the city during a term of three years, for the city council:—
Lovell, S., and Son (accepted).

Canterbury.—For the addition of a ward for special cases and a nurses' room to the workhouse infirmary, for the board of guardians:—
Wiltshire, G. (accepted) £408 10 0

Dartford, Kent.—For addition to machine-room at Riverside Mills, for the London Paper Mills Co., Ltd. Mr. G. H. Tait, M.Inst.C.E., Dartford, engineer:—

Stevens, T., London	£393 0 0
Naylar, J. G., and Son, Rochester ...	387 0 0
Hewett, E., Dartford	361 0 0
Seager, H., Gravesend (accepted) ...	325 0 0

East Finchley.—For the nave, south aisle, and narthex of All Saints Church. Messrs. J. E. K. and J. P. Cutts, 28, Southampton-street, Strand, W.C., architects:—

Peto Bros. (late)	£5,100 0 0
Nightingale, B. E.	5,080 0 0
Adamson and Sons	4,991 0 0
Dove Bros.	4,975 0 0
Lathey Bros.	4,970 0 0
Woodward and Co.	4,830 0 0
Holloway Bros.	4,800 0 0
Tyerman, J.	4,735 .0 0

Eastleigh.—For additions to the Home Tavern, Eastleigh, Hants, for Messrs. Strong and Co., Romsey. Mr. W. H. Mitchell, Southampton, architect:—

Stevens, H., and Co.	£1,497 0 0
Bull, J., Sons, and Co.	1,396 0 0
Nichols, J.	1,365 0 0
Light, W. R. and C., Portsmouth*	1,330 0 0

Rest of Southampton.
* Accepted.

Freshwater.—For widening Gate-lane, for the Isle of Wight highway commissioners. Mr. J. E. Haynes, surveyor:—

Coker, F. S.	£69 10 0
Kingswell, J.	65 0 0

Halesworth.—For the erection of a police-station, court-house, and superintendent's residence at Halesworth, for the East Suffolk County Council. Mr. H. Miller, jun., M.Inst.C.E., Ipswich, county surveyor:—

Grayston	£1,399 0 0
Dobson	1,346 0 0
Everett	1,320 0 0
Gibbs	1,235 0 0
Gibbs	1,212 0 0
Coe	1,194 0 0
Cole	1,166 0 0
Carter	1,161 0 0
Limmer	1,124 0 0
Howard, Halesworth (accepted) ...	1,090 0 0

Hampton Wick.—For additions to boathouse, The Elms, Hampton Wick, Middlesex, for Mr. F. Jacob. Mr. E. H. Abbott, 6, Warwick-court, High Holborn, London, W.C., and High-street, Hampton Wick, Middlesex, architect:—

Harris, W.	£280 0 0
Oldridge, C., and Sons	198 0 0
Hall, Beddall, and Co.	195 0 0
Collinson, J. F.	193 0 0

Harrogate.—For roofing-in the cattle shed, for the town council:—
Barker, W. (accepted).

Holywell.—For carrying out an extension of the Rhewl-Mostyn system of water-supply to the village of Halendy, for the Holywell Rural Sanitary Authority:—
Morris, Peers, & Jones (accepted) ... £219 10 0

HIGHGATE.—For the erection of model dairy and dwelling-houses, South-grove, N., for Mr. C. Davies. Messrs. Bray, Young, and Co., 6, Warwick-court, High Holborn, London, W.C., architects. Quantities by Mr. A. Johnson:—

Hall, Beddall, and Co.	£3,188	0	0
Patman and Fotheringham ...	3,158	0	0
Ward and Lamble	2,959	0	0
Dixon, J. W.	2,903	0	0
Southcote, J., and Co.	2,797	0	0
Scharien and Co. (accepted) ...	2,687	0	0

KENSINGTON.—For shop alterations at No. 15, High-street, Kensington, for Messrs. Slater, Ltd. Mr. C. R. Guy-Hall, architect:—

Whitaker, J.	£297	10	0
Nash, W....	290	0	0
Barker, J., and Co. (accepted) ...	255	0	0

KILBURN.—For the erection of a new police-station at Kilburn, for the Receiver for the Metropolitan Police District. Mr. J. Butler, F.R.I.B.A., architect. Quantities by Mr. W. H. Thurgood:—

Higgs and Hill	£6,340	0	0
Nightingale	6,039	0	0
Patman and Fotheringham ...	5,998	0	0
Aviss	5,997	0	0
Chappell, J. T.	5,993	0	0
Grover and Son	5,987	0	0
Hart Bros.	5,970	0	0
Ansell	5,917	0	0
Lathey Bros.	5,900	0	0
Scrivener	5,890	0	0
Thompson, J....	5,878	0	0
Holloway	5,843	0	0

KILBURN.—For certain repairs at No. 4, High-road, Kilburn, for Mr. H. J. Meredith. Messrs. Godwin, Basley, and Co., 28, Cadogan-place, S.W., surveyors:—

Webber, A.	£255	0	0
Anderson, A.	224	10	0
Lott	222	0	0
Oldrey	155	0	0

KINCARDINE.—For the construction of a branch line of railway 4½ miles in length from Alloa to Kincardine, for the Directors of the North British Railway Company:—Young, J., and Sons, Edinburgh (accepted) ... £36,000

KINSON.—For erecting schools at Kinson village, for the Kinson School Board. Messrs. Lawson and Donkin, architects:—

Kite, Salisbury	£1,195	0	0
Rigler, J., Poole...	1,040	0	0
Scott, W., Parkston	1,038	0	0
Newman, Poole	988	0	0
Lucas, J. W., Bournemouth	983	0	0
Baker, Wimborne	935	0	0
Saunders, Longfleet	919	0	0
Rigler, T. C., Longfleet	895	0	0

LEEDS.—For branch bank, Kirkgate, for the Birmingham and Midland Bank, Ltd. Mr. W. Bakewell, Leeds, architect:—

Bateman, A.	£3,993	13	6

LEEDS.—For enlarging the Crown Point Bridge, so as to carry a 24in. main over the River Aire in connection with the new Meanwood-road Valley supply. Mr. T. Hewson, borough engineer:—

Irwin (accepted).

LEICESTER.—For St. Paul's Methodist New Connexion church and schools, Melbourne-road, Leicester. Mr. A. H. Goodall, Nottingham, architect. Quantities by the architect:—

Bell, G., and Son, Nottingham ..	£4,417	0	0
Riddett, J., Leicester	4,408	10	0
Tuffley, G., Leicester	4,215	0	0
Richardson, T., and Son, Leicester	4,075	0	0
Needham, W., Loughborough ...	4,070	0	0
Bland, H., Leicester	4,045	0	0
Plant, A., Leicester	4,020	0	0
Major, F., and Son, Leicester ...	4,015	5	0
Hutchinson, J., Nottingham ...	4,000	0	0
Cuthbert, T., Nottingham	3,965	0	0
Cooper, J., Nottingham	3,917	0	0
Clarke, A. B., Nottingham ...	3,900	0	0
Northam, J., Leicester	3,812	0	0
Mason, J., and Sons, Leicester* ...	3,730	0	0
Gell, W., and Son, Nottingham† ...	3,384	0	0

* Accepted. † Withdrawn.

LEWISHAM.—For laying new pipe sewer on the Laurel Cottage Estate, Hither Green-lane, Lewisham. Mr. A. L. Guy, A.R.I.B.A., 78, High-street, Lewisham, surveyor:

Osenton, G., Westerham	£440	0	0
Kennard, D. and R., Lewisham ...	426	0	0
Woodham, W. & J., Lower Sydenham (accepted)	402	0	0

LEWISHAM.—For the erection of stables at Riverdale Mill, High-street, Lewisham, for Mr. J. Wallis. Mr. A. L. Guy, A.R.I.B.A., 78, High-street, Lewisham, architect and surveyor:—

Holloway, H. L., Deptford	£533	0	0
Soper, R., St. John's	504	0	0
Robson, C.	503	0	0
Kennard, D. and R.	477	0	0
Jerrard, S. J. (accepted)	424	0	0

Rest of Lewisham.

LEWISHAM.—For alterations and repairs at the Ravensbourne Club and Institute, Lewisham Bridge, Lewisham. Mr. A. L. Guy, A.R.I.B.A., 78, High-street, Lewisham, architect and surveyor:—

Court, T. H., Deptford	£220	0	0
Hoare, R....	203	0	0
Kennard, D. and R.	183	0	0
Soper, R., St. John's	170	0	0
Robson, C. (accepted)...	169	0	0

Rest of Lewisham.

LLANDYSSIL.—For stable at Penrullfachnog, for Col. Lewes. Mr. D. Jenkins, architect:—

Evans and Jones, Llandyssil ...	£224	0	0
Jones, D. and J., Newcastle Emlyn	186	0	0
Davies, J. J., Newcastle Emlyn* ...	181	15	0

* Accepted.

LLANDYSSIL.—For additions and alterations at Llysnewydd Mansion, for Colonel Lewes. Mr. D. Jenkins, A.R.I.B.A. and M.S.A., architect. Quantities by the architect:—

Rees, J., Llandyssil...	£4,860	0	0
Jones, J., Merthyr Tydfil	4,810	14	0
Thomas and Lewis, Newcastle Emlyn	4,300	0	0
Jones, D. and J., Newcastle Emlyn	4,121	5	7
Jones, J., Drefach, Newcastle Emlyn	3,890	9	4
Jenkins, B., Brecon (accepted) ...	3,850	9	1

LONDON.—For the erection on the undermentioned sites of four buildings, each to contain a room for the teaching of manual training, and also a room for the use of the clerk of works for repairs, for the London School Board:

St. Clement's-road, Notting Hill:—

Clifton, H. C....	£1,750	0	0
Head, W. B., and Son	1,418	10	0
Sealy, G. H.	1,288	0	0
Barlow and Roberts	1,199	0	0
Cowley and Drake, Willesden* ...	1,143	0	0

Hither-green, Lewisham:—

Derry, J....	£1,082	0	0
Lorden, W. H., and Son	897	0	0
Hodgin, J. H.	864	12	0
Dabbs, W. M.	852	0	0
Holloway Bros....	805	0	0
Smith, J., and Sons	779	0	0
Co-operative Builders Co.	774	0	0
Nightingale, B. E., Lambeth Embankment*	754	0	0

Wood-street, Woolwich:—

Derry, J....	£1,133	0	0
Lorden, W. H., and Son	949	0	0
Dabbs, W. M.	910	0	0
Holloway Bros....	852	0	0
Hodgin, J. H.	839	12	0
Co-operative Builders Co.	820	0	0
Smith, J., and Sons	796	0	0
Nightingale, B. E.*	780	0	0

Malmesbury-road, Bow:—

Davis Bros.	£1,130	0	0
McCormick and Sons	947	0	0
Dearing, C., and Son	938	0	0
Stevens Bros.	933	0	0
Calnan, M., and Co.	846	0	0
Atherton and Latta	842	0	0
Norris and Luke	824	0	0
Robey, J. T., Bow-road, E.* ...	793	0	0

* Accepted.

LONDON.—For constructing a steel twin-screw steamship, capable of conveying 1,000 tons of sewage sludge and discharging it at sea, for the London County Council: Schlesinger, Davis, and Co. (accepted)... £28,000

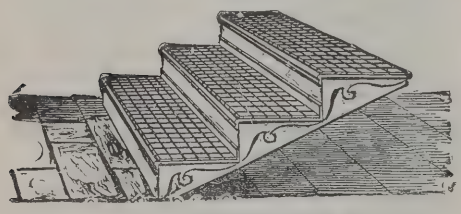
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Birmingham
Bishopsgate
Blackfriars
Blackfriars Bridge
BlakeStreet, Sutton Coldfield
Blaydon-onTyne
Bletchley
Bolton
Bolts Bridge
Bombay, India
Bow
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Brick Lane
Bristol
Broadfield
Broad Street
Broadstone, Dublin
Burdett Road
Burscough Junction
Burton
Bury
Borough Road
Mersey Tunnel
Canonbury
Camden Road
Chalk Farm
Charing Cross
Cheddington
Cheetham Hill Junction
Chequerbent
Clayton
Clifton
Clitheroe
Crewe
Crooked Billet Level Crossing
Cross Lane
Crumpsall
Cullercoates
Cannon Street
Dalston
Daubhill
Daybrook
Denholme
Derby
Droylesden
Drighlington
Dudley
Dudley Port
Dundee
Ealing Common
Ealing Terminus
Earl's Court
Edgware Road
Failsworth
Farringdon Street
Farrington
Fenchurch Street
Finchley Road
Firsby
Forest Gate
Forest Road Level Crossing
Fulham
Geedley
Gloucester Road
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Greenwich
Hackney
Haggerston
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Hereford, Barr's Court
Highbury
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Kilburn
Kilsby
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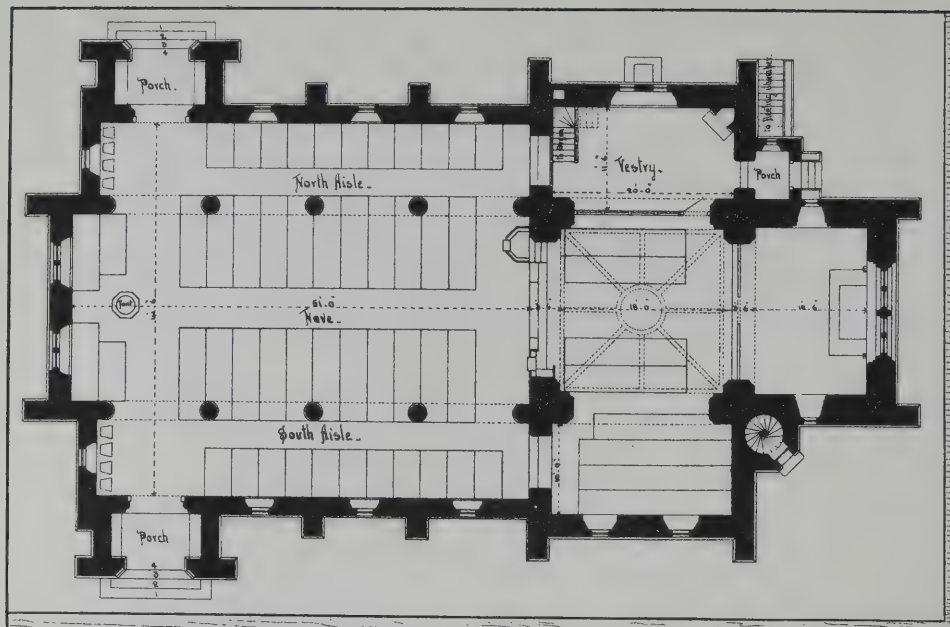
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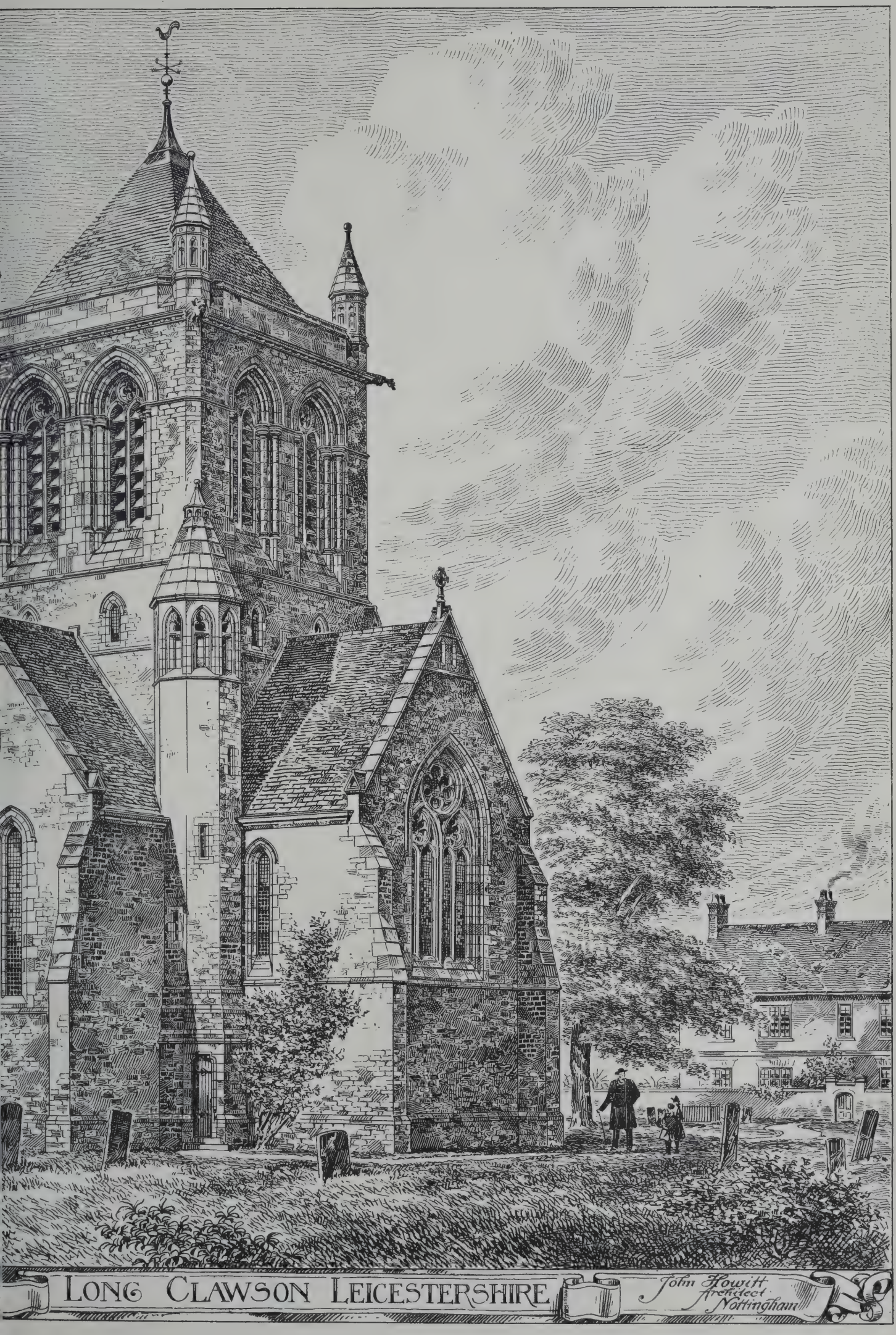
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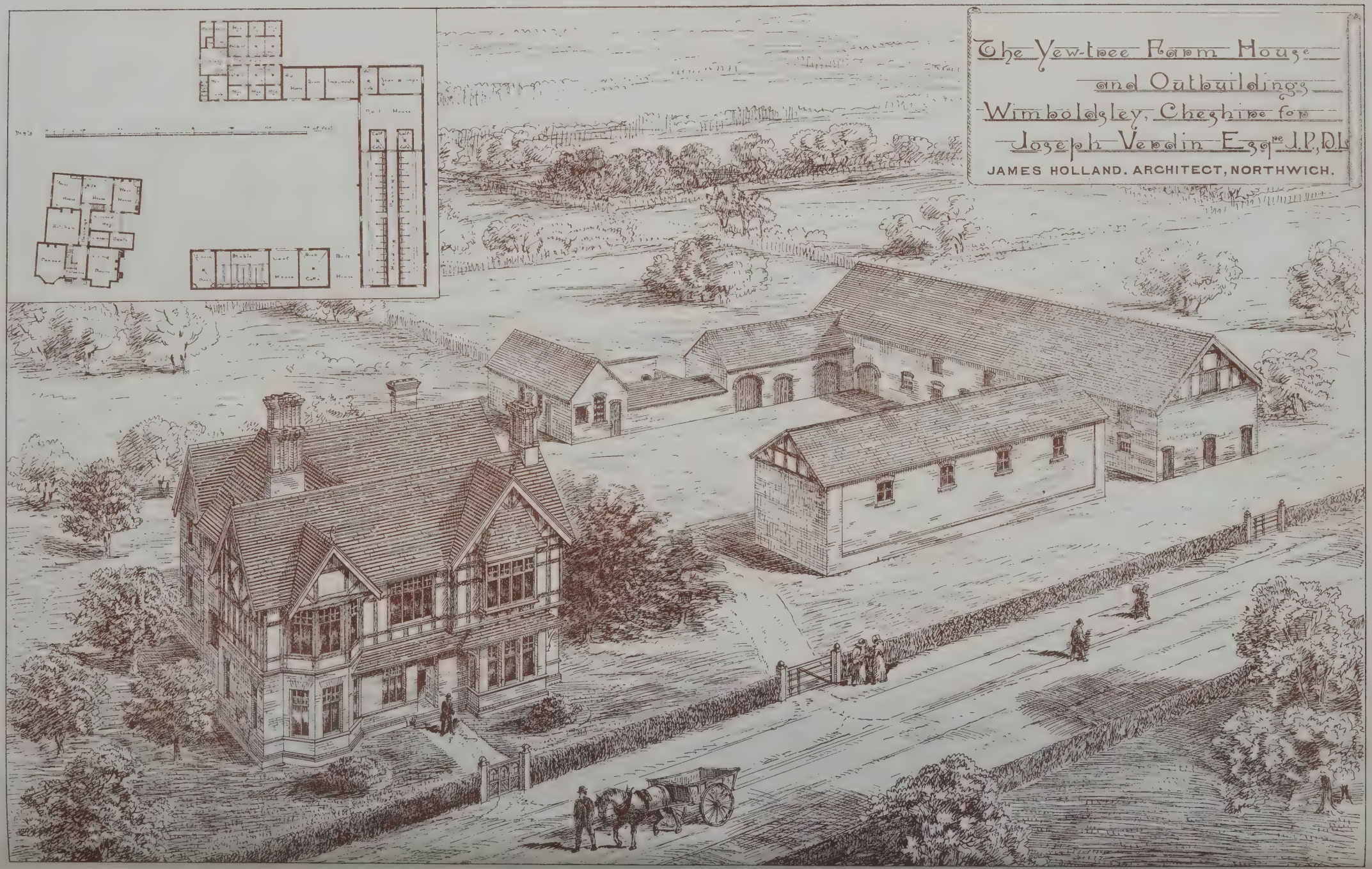


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John Howitt
Architect
Nottingham


The Yew-tree Farm House
and Outbuildings
Wimboldsley, Cheshire for
Joseph Verdin Esqre J.P., D.L.
JAMES HOLLAND. ARCHITECT, NORTHWICH.

A. House. at. Weybridge.

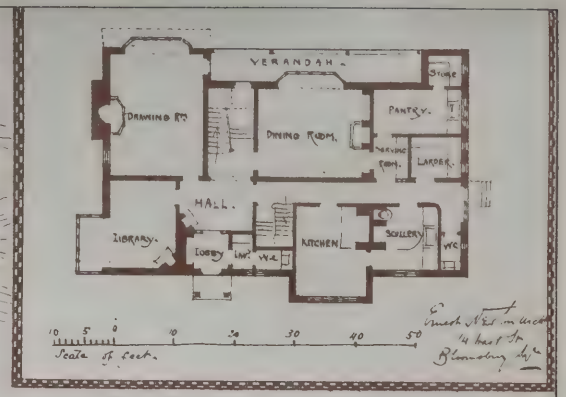
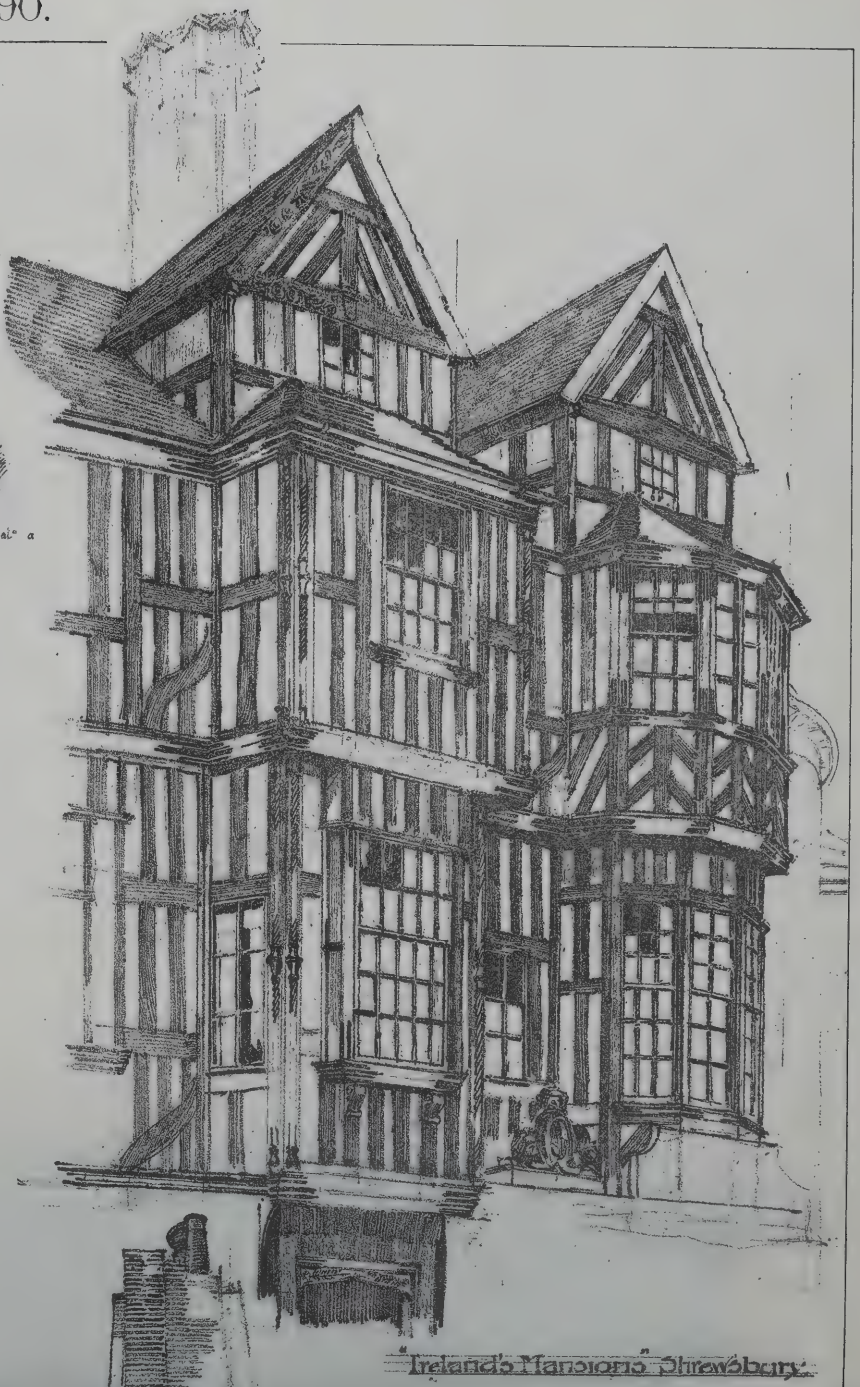


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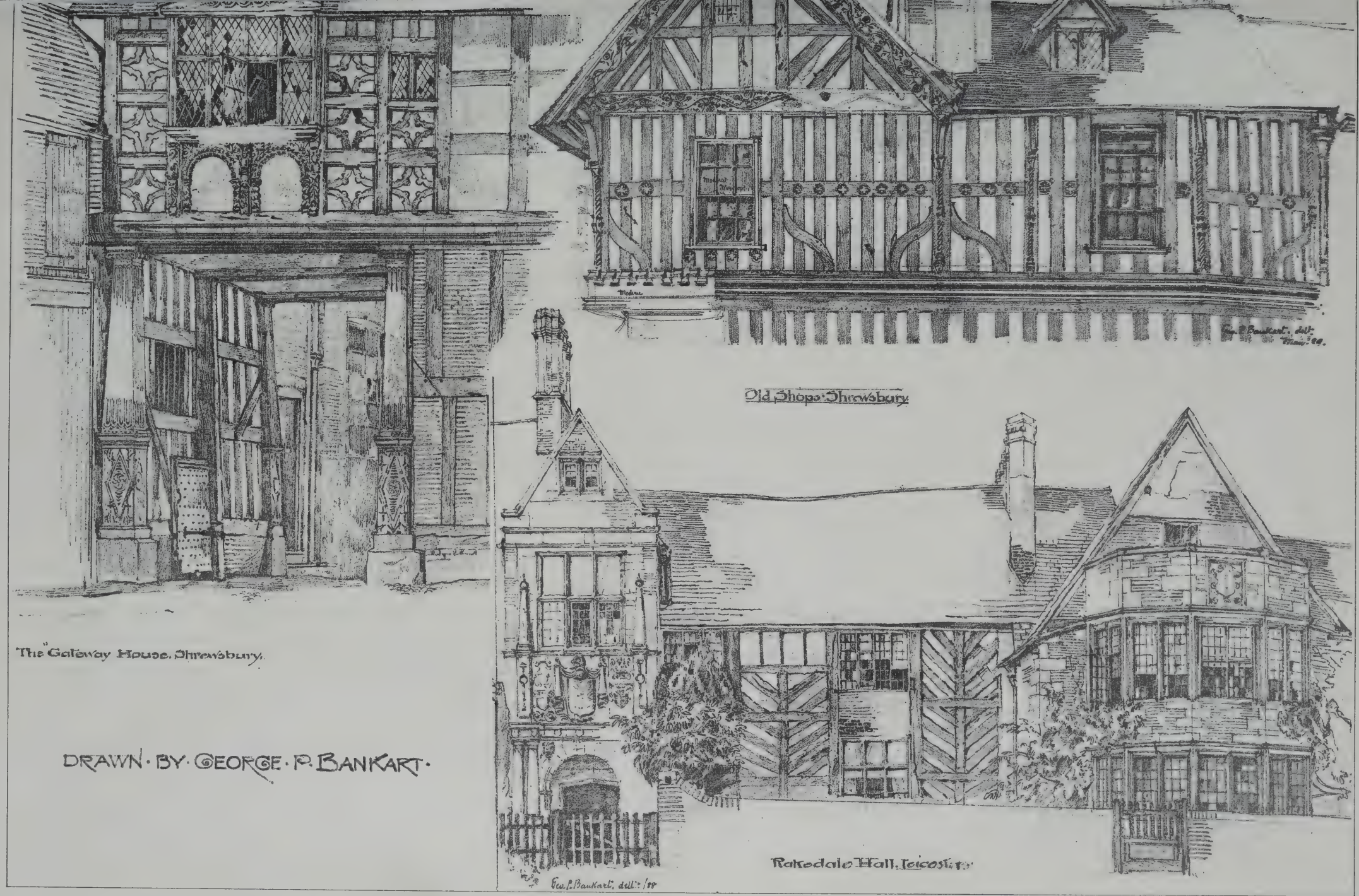
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THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LIX.—No. 1868.

FRIDAY, OCTOBER 24, 1890.

THE ARCHITECT'S POWER.

TO what an extent an architect, as general agent of his employer, may exceed his direct professional duties, is a question that has not been very clearly answered, nor is ever likely to be so. Many of the duties rendered by an architect in the course of his professional engagement are of an irregular kind; a hundred little matters may be done by him for which he does not receive any remuneration—such, for instance, as discussing points with his client which have already been settled by the contract, visiting manufacturers, in assisting to select fittings, and attendance upon various people. For these gratuitous services he may never receive a shilling, yet when he does anything connected with the contract which is a little beyond his primary duties, he lays himself open to misrepresentation or to a charge of exceeding his authority. How far, for example, he can go in ordering any deviations or extras, or in obtaining goods for the work, are rather delicate questions, which an architect should endeavour to answer for himself, and which will probably vary with circumstances. Clients are not alike: some may be inclined to give *carte blanche* to their adviser, to leave everything in his hands about which they themselves know little or nothing; others hardly like their architect to go out of their sight—certainly not to do anything without consulting them. We have heard of employers making themselves masters of the specifications, looking at all materials supplied, and seeing everything being done, even to the mixing of mortar and the laying of drains. Between these two extreme views of a client's duties it may indeed be hard to draw a line. An architect may decline to be subject to interference on the part of his employer, though whether he can refuse to accept anything which has been ordered contrary to his specification is rather questionable, and to raise the point will generally lead to unpleasant consequences.

The professional man, as agent of the employer, can bind him by acts within the scope of his employment. He can, for example, bind his employer to certain acts and orders which appertain to his employment as architect; he can order additions and deviations in carrying out the work, so long as they do not alter materially the contract or drawings and specification; he has an implied authority to retain a quantity surveyor under certain circumstances, or where tenders are required; and he has generally an authority to act in the interests of his client; but beyond these cases it is rather doubtful whether he has the legal power to bind his employer. The architect's power, so far, is independent of any special agreement; but the Courts appear to be jealous of extending the architect's authority under these circumstances; perhaps because they think that professional men are inclined to take upon themselves more than they are justly entitled to, and, no doubt, there may be an inclination to do so under some circumstances. But, of course, this power or authority of the professional man can be extended. The employer can sanction his architect to do whatever he may desire, and this power can be expressed in the contract. For example, it is usual to make a condition to the effect that the contractor is to make such additions, omissions, or variations as the architect may direct. This liberty of being able to order additions or variations may be attended with disadvantages, and sometimes not in the interests of the employer. In those cases where employers are inclined to be crotchety and vacillating, or disposed to object to necessary deviations, we think this kind of clause necessary, or, at every suggestion of the architect the employer may be inclined to demur. We now consider those cases in which no special agreement exists. All we gather from the opinions of the Courts prove there is an inclination to limit the authority of the architect, and to confine his acts and orders within the scope of his employment. One case, "Kimberley *v.* Dick," illustrates the view taken by the Court when the architect orders various additions and variations under the contract, reserves the power to decide what are additions and variations, and the payment the contractor should receive. One of the conditions of the architect's appointment was that the additions to the house were not to exceed a certain sum; but this stipulation was not made known to Kimberley, the plaintiff, who sent in a tender rather below the amount. The architect exercised the right under the contract to order additions and variations, and it was held *inter alia* that the architect was general agent for Dick in matters connected with the erection of the house; therefore, the plaintiff was not bound by the undisclosed condition between the architect and employer that the cost should not exceed the sum stipulated. From the decision, it appears that when any such stipulation between architect and employer is not made known to the contractor, the latter can assume that the architect can bind his employer by any order. Kimberley was not bound to the amount agreed to under these circumstances. He naturally thought that the architect could bind his employer to any sum that was necessary, and being no party to the agreement, it was ruled that he was not responsible for the increased outlay.

Those who contract ought to know, therefore, what the intentions of the employer are. In these cases, at least, every builder has a right to assume that the architect can pledge his employer's credit within the limits of his employment. When a contractor receives an order to do something not in the specification, he is justified in carrying the order into execution. Therefore, it is a matter for the architect to make himself sure of his position before giving orders to any considerable amount. He ought, as we have said, to know the limits of his authority as agent for his client, and if he has any doubt about this, he should receive special authority. We allude more particularly to those circumstances in which the architect, sometimes with the best of motives, gives an order to a manufacturer for goods or materials to a considerable amount. It may be again asked, What are the limits and the amount to which he may pledge his clients? No definite opinion has yet been given to decide this question. An architect may justifiably think that as he has the power to bind his employer to anything connected with the building, he is justified in ordering any material, like stone or particular fittings. The legal cases that have been settled throw very little light on the point. In one instance the architect ordered a quantity of stone for a church, pretending, so it was alleged, that he had authority from the committee to do so; the stone was supplied to the employers' account, but they refused to pay, and an action against them was dismissed. It was held that he was liable to the builder for their value, whether the representation was fraudulently or honestly made. The builder recovered also the costs of the action against the employer which failed from want of authority to bind him. All that this decision proves is that an architect cannot bind his employer if the latter turns round and denies his authority; but it in no way clears the doubtful ground. An architect may honestly believe he has a right to order and yet become liable to an action. The law in short interprets the order as implying an authority; but if this decision be carried to its logical conclusion, every order, however small, which an agent may think himself justified to make as within the scope of his employment, would be equally liable to be contradicted. However this may be, it is certain that an order given by an architect without a special authority is open to a very wrong interpretation, or as one lawyer has put it "a person professing to contract as agent for another, impliedly if not expressly, undertakes to or promises the person who enters into such contract, upon the faith of the professed agent being duly authorised that the authority which he professes to have does in point of fact exist." The less, therefore, a professional man enters into contracts of this sort the better, and, in short, the less he gives orders on his own authority the more likely he will be to avoid the complication and difficulties which arise from them.

What acts and orders the architect has a right to consider to belong to his employment, or to his duties, is a matter of very much doubt, for we know that what one person has done, and can do without hesitation, another professional man has been held to be liable for. Thus, in one case, an architect was held to have no authority to direct the substitution of stone for a brick wall, in an action brought by the employer against the builder, who had been instructed by the architect; in another, when the contract gave power to the architect to vary the work, or to make "additions or omissions," and the contractor was instructed not to pile the foundations, it was held that this was a deviation, and not an addition or omission. The last decision appears, on the face of it, to be a very puerile one, as the word "omission," might have been intended to cover any work to the foundation that the engineer thought unnecessary to be done. The profession, with these decisions before them, cannot be too particular in defining the powers or authority they are supposed to possess as general agents. The ordering, for example, of material, such as stone or terra-cotta, ironwork, or any special fittings, unless with special sanction, does not bind the employer to pay for them. We occasionally hear of architects doing these things, and expecting their clients to raise no objection, or expecting to make some set-off to satisfy the contractor. In point of fact, they imagine they have the power, and make the person who enters into the contract believe so too. A more common exercise of authority is engaging a quantity surveyor. We know of men who, immediately they receive an order to prepare contract plans, appoint a surveyor without any authority to do so from the employer. No legal decision has confirmed the employment, unless some sort of implied authority has been given—such as that of obtaining tenders from builders; and even then the implied power must be reasonable. For example, it does not follow necessarily, because an architect has authority to prepare plans and specifications, and obtain tenders, that, therefore, he has authority to bind his employer to pay the percentage of the surveyor. Builders may agree to take out their own quantities, or join together to engage someone to do so. Custom alone can establish the rule. The legal decisions are not at all decisive. One judge has affirmed that, apart from actual contract, the employer should not pay for quantities. If we take a case of tenders, based on quantities that are too high to be accepted, it appears the more unreasonable to charge the employer with the cost of them. In this particular exercise of authority the professional man ought to have the concurrence of his client.

SHOULD RAIN-WATER BE ADMITTED TO SEWERS?

SOME few towns have succeeded moderately well in disposing of their sewage. The authorities have seen that they must make up their minds to spend a considerable sum of money in doing so, and get rid of the question which had been cropping up from time to time for many years, and they have done this, moreover, as a matter of great economy. But for every such town there are a score in which sewage difficulties of one sort or another are always arising, even at this day, when people might very reasonably suppose the difficulties had been got rid of. But that is far from being the case. It seems as if, in some cases, hardly anything will move the spirit of town councils and local boards—these especially—to come to a decision in the matter. The law is not complied with, but what of that? They prefer to run the risk of it being put in force, knowing well enough that those who might do so will not. It might be asked why the Local Government Board does not enforce the law everywhere? and the only answer would be the echo, Why? The County Councils might do something towards amending this state of things if they had the power, or, having it, were willing to see that sewage be no longer poured into rivers and streams until the best practical means have been adopted for its disposal. We shall see, perhaps, what they will do, by-and-by.

There are more fanciful difficulties than real ones in disposing of sewage. The real ones may be enumerated distinctly. One of them is as follows:—It lessens the difficulty of disposing of sewage to equalise the quantity arriving at the outfall day by day. This cannot be done exactly, because of the irregularity of rainfall, some of which, at least, must be admitted to the sewers; but a good deal may be done towards this end, and in some towns it is worth while to do it; in those, namely, where the contour of the ground is such that the distance to the river or a stream flowing into it is not great from any part of the town; and this is a very common thing. As the excessive quantity of sewage caused by heavy rainfalls cannot well be dealt with at the sewage outfall, separate drains to convey the excess directly to the rivers and streams are desirable. But here comes in the question of separate drainage, or the separate system of drainage, so called. That system, as first proposed, was impracticable. It was first advocated by one or two persons who knew little of the difficulties of town drainage, even as they existed then, and they have increased since. The system recommended has had other advocates too; but the difficulty of carrying it out in its entirety is almost, if not quite, insuperable. It consists in admitting to the sewers no rain-water at all, making it necessary, therefore, that a separate drain for the rainwater be laid to the back of every house, in cases where houses are drained singly; and, in consequence of many of the house-drains being laid through narrow passages there is not room enough for two drains. If we suppose such a thing as that a town were given us to build, as well as its drainage to construct, we might make the proper arrangements for draining it by a completely separate system of drains—one for the rainwater, and the other for the sewage; but even then we should have to contend with the misuse to which the rainwater drain would be put. There is, however, no difficulty in a modified system, whereby some portion of the rainfall is admitted to the sewers, and the bulk of it conveyed into the natural streams.

In laying down new sewers, many old culverts and watercourses, which have been from time to time covered in, are met with, and if these be restored, they may be made useful for the purpose; and where that is not practicable, new drains can be laid to convey the greater part of the rainwater to the natural streams.

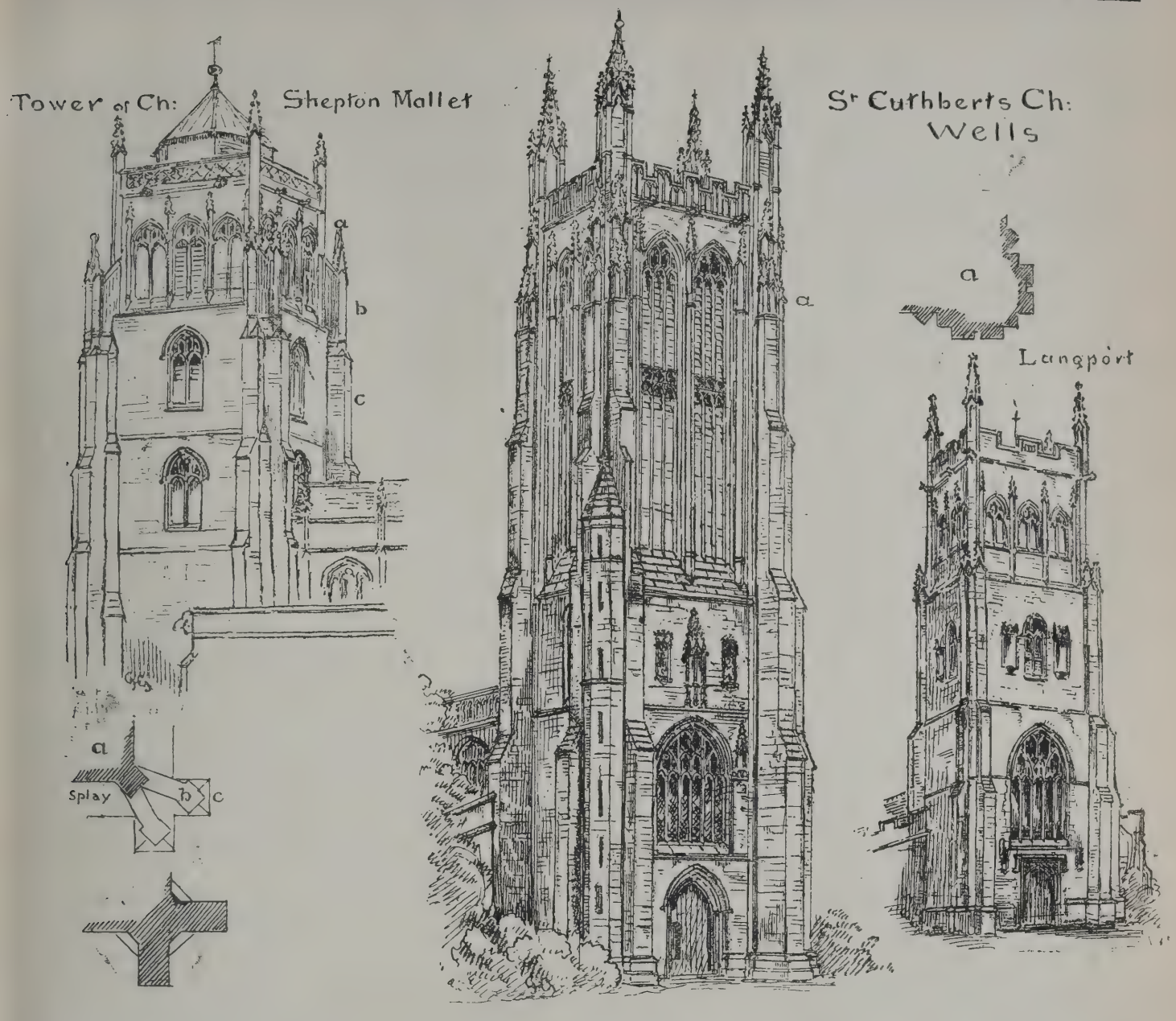
It has been said that rainwater, falling upon the streets of towns, carries with it so much filth that it becomes as foul as any sewage, and therefore is not admissible into streams. The first rush of water from a street down the gulleys carries with it much dirt, especially from macadamised roads, and where the scavenging is neglected; but in a short time, and before the run of water has attained its greatest volume, it begins to run clear, and it is this greater portion of the clear rainwater which should be excluded from the sewers and turned into separate channels; but with due scavenging of the streets, all the rainwater from them may be diverted, leaving only that which comes from the backs of houses to go into the sewers. The due scavenging of the streets, to which we refer, is desirable in point of salubrity of the town, apart from the question of rivers and streams. As regards degree of pollution, which is important to be considered, the area of the town in relation to the volume of the river or stream into which a given volume of rainwater and sewage is discharged should be taken into account. It is much more injurious, for instance, in the upper and middle portions of a river than in the lower or estuary portion, where, not only is the volume of water much larger, but it contains already much débris of all sorts, so that it cannot be used for so many useful purposes as the clear water higher up the river. If domestic purposes be left altogether out of consideration, there yet remains the desirability of preserving river water clear for many other purposes. The filth of the streets, caused by a large amount of horse traffic, should therefore be treated as solid sewage in all towns above the estuary of the river.

On every acre of land built upon in a town the approximate number of 50 persons may be taken as an average, or twenty acres per thousand. Every tenth part of an inch in depth of rain produces 10 tons of water per acre, or 200 tons per thousand of the population. But in towns generally, perhaps, 25 persons per acre may be about the average, and the weight of water 400 tons per thousand of the population. We have only to consider how many tenths of an inch of rainfall in a year occur to find what a very large quantity of mere water has to be dealt with when the sewers convey the whole of the rain-water to the outfall of the sewers. Some deduction however, must be made for a portion of the rainfall which does not reach the sewers. A portion is evaporated, and another portion is absorbed by the ground and does not reach the sewers directly, though most of it probably does so eventually through the joints of the work, where no special provision is made to exclude it. The portions of the rainfall evaporated and absorbed by the ground cannot well be ascertained separately, but must be taken together. Observations made for the determination of the sizes of the sewers of the Metropolitan Main Drainage established the fact that the quantity of rain-water which flowed off by the sewers was in all cases less than that which fell on the ground, and it was concluded as a rule of averages that $\frac{1}{4}$in. of rainfall would not contribute more than $\frac{1}{8}$in. to the sewers, directly and immediately; nor a fall of $\frac{4}{10}$in. more than $\frac{1}{4}$in. These observations, however, do not show what depth of rain begins to contribute water to the sewers, nor do they show the proportion contributed of falls greater than $\frac{1}{10}$in. On the one hand we may suppose a fall of $\frac{1}{100}$in. would contribute none at all to the sewers, and, on the other, that a fall of 1in. would on many occasions nearly all run off directly into them. The depths stated above are for 24 hours; if they occur during one hour the relative quantities falling and running off the ground would be altered; more, probably, than $\frac{1}{8}$in. out of $\frac{1}{4}$in., and more than $\frac{1}{4}$in. out of $\frac{4}{10}$in., would flow directly into the sewers. Very little can be deducted for evaporation, for the convenience of street traffic does not allow of rainwater lying long upon the surface exposed to evaporating influence; and, in respect of absorption, nearly the whole surface is covered almost impenetrably on the closely built areas, so that on these portions of the town but little can be deducted on that account; but taking the whole drainage area, considerable portions will be included within the boundary, upon which a greater part of the rainfall is absorbed, and a correspondingly smaller portion reaches the sewers.

It is a great detriment to the disposal of sewage—whether that be its application to land or chemically in tanks—that any large quantity of road detritus should be carried down to the outfall, and where the roads are chiefly made and repaired with broken stone or "macadam," this of itself would be a sufficient reason for diverting heavy rainfalls. Their admission flushes the sewers, no doubt; but that is better done by means of sluices, which can be closed and opened at will. It is one of the necessary expenses of the disposal that not only excessive quantities of rainwater be prevented reaching the outfall, but that the solid ingredients of the sewage be prevented settling on the bottom of the sewers; and this means regular flushing. With sewers of the proper form and directions now almost universally adopted, this becomes possible with a moderate amount of labour. With the old form of sewers it was impossible without an excessive expenditure.

TYPICAL CHURCH TOWERS.—III.

REFERRING the reader to our last article, p. 389, for the peculiarities of the Somersetshire towers, we pass on to notice the fuller development of the style as exemplified in the very noble and dignified instance of St. Cuthbert's, Wells, which we now illustrate by a sketch. Strange to say, this tower has not received the attention bestowed on other structures of the class in the same county. The St. Cuthbert tower resembles in many important features the Evercreech and Wrington examples, both of which we have illustrated: first, in having three main stories; secondly, in the great height of the belfry stage and its windows; and, thirdly, in the general design of the angles and their buttresses. To examine the proportions, we find that the upper or belfry-stage of St. Cuthbert's, like that at Wrington, occupies about half, or rather more, of the whole height of the tower, which distinguishes it in a marked degree from every other class of towers. There is a majesty in this treatment: it at once draws attention to the great height of the structure, for the eye naturally takes the scale from the three lower stories in the west front, which can be gauged by reference to the church itself, and by the apparent height of the belfry windows, with their uninterrupted vertical lines of jambs and mullions. Looking up at the tower from below, the angle of vision subtended by the belfry can hardly be taken in at one glance; the only break in the vertical lines is the pierced transom in the tracery. If, instead of being in one story, there had been two separate ones with a marked stringcourse between, the tower would not have been half so imposing as it is, for the several stories would have suggested to the mind the ordinary division into stages, and the real height would not have been so perspicuously appreciated. The loftiness of the upper stage is a sort of *tour de force* which, by startling the eye, makes the impression of height. A number of smal stories scarcely produces the effect, becaus



they are more commonly met with, and unless the observer is close to the tower, and the scale is perceived, the repetition is not telling. Further, apparently, to increase the unexpected loftiness of the upper stage, the western front of the tower is divided below the sill of the great window into three parts by string-courses; in the lowermost is the western doorway, in the next story is a large Perpendicular window of six lights, and in the third stage are three canopied niches. These divisions at once give a scale to the rest of the tower. The gradation of the buttresses also, which divides the height into four main parts, is effective, and imparts a graceful outline to the whole mass.

Closer examination of the angle-buttresses show a decided refinement upon the Wrington tower. It will be noticed that while there is the same number of set-offs, and in much the same proportion, the engaged pinnacles (see plans *a*, *b*, and *c*) which adorn the upper stage of each buttress are arranged in a group of three—a centre one which terminates against the angle pier at about the level of parapet, and two lower and smaller ones at its base. The Wrington example has only one pinnacle engaged anglewise in centre of corner pier, and it terminates below the upper cornice or parapet. The triple pinnacle arrangement of St. Cuthbert's springs from a wider buttress, though in both the external buttresses are set a little within the outer angle of the tower, and the recessed upper story makes the angle-piers at each corner, which are carried up to form the corner turrets. At Wrington these angle piers are cut off by a stringcourse on a line with the parapet; but at St. Cuthbert's the stringcourse is omitted, and the face of each pier is carried up uninterruptedly into the turret. The advantage of the latter is evident: the angles of the tower form one continuous feature, and the turrets do not look as if they were after-additions. There is certainly more elegance and finish in the design accordingly of the corners, and the triple pinnacles engaged just below the parapet produce a tapering line which leads the eye from the outer buttresses to the turrets. There is one other difference to notice between these two examples. At Wrington the central pinnacle between the belfry windows is carried up through the parapet, and becomes an isolated pinnacle breaking the parapet; but at the tower of St. Cuthbert it is not carried through. The parapet of the former is composed of pierced trefoils alternately arranged between equilateral triangles; that of St. Cuthbert is panelled and battlemented as we find also at Chewton Mendip, St. Stephen's, Bristol, and other instances.

The horizontal lines so commonly seen in other towers are remarkable by their absence in this instance. They are here broken and discontinuous where they occur, so as to emphasise the vertical lines and height. The corner turrets, as we have seen, are not cut off by a stringcourse, but are carried up without a break from the piers, a peculiarity that we scarcely see anywhere else. In most other Somersetshire and Gloucestershire towers, the horizontal cornice line under the parapet is strongly marked, as we see at St. Mary's, Taunton; Huish Episcopi; Chewton Mendip; St. Stephen's, Bristol; and the central tower of Gloucester. In all of these, especially in the latter, the horizontal lines are emphasised. The idea of being added or put on afterwards is particularly strong in looking at the parapets and turrets of St. Mary's, Taunton, with its very elaborate battlemented parapet and panelled corner turrets. This idea is strengthened by the isolated pinnacles which stand out from each corner turret, and are carried on carved gargoyles. These detached pinnacles seriously destroy the graceful outline. The same arrangement of detached angle-pinnacles to the upper turrets is seen at Huish Episcopi, where the quatrefoiled and panelled parapet, broken by battlements, makes a very rich termination. Contrasting these upper crownings with those of the East Anglian types, when we refer to them we shall notice a very considerable difference, though in many of the latter towers the terminations or turrets have never been added.

St. Cuthbert's has a nobly-proportioned

plan of church with nave of six bays, opening into the western tower by a lofty archway, the lower story forming a baptistery, which is groined. There are side aisles with double transepts, each separated from the aisles by two arches, a deep chancel, and chantry chapels. The arcades are lofty, with clustered shafts, and the nave is covered by a rich flat Late Perpendicular roof of tie-beam type, with fine carvings of angels, and with pierced tracery filling-in. There is a richly carved pulpit, with grotesque carvings in the panels. The lower stage of buttresses to west front are enriched by gabled panels with trefoil arches on shafts, and by quatrefoils at the angles of buttress above.

The two other sketches we give illustrate a less ambitious class of towers. The tower of the picturesque church of Shepton Mallet, about five miles south-east of Wells, resembles in some of its features the towers of Banwell and Cheddar. The upper stage has the three windows, the centre one only pierced, with engaged pinnacles between; these resting on a deep weathered sill, which at the same time reduces the thickness of the walls and makes a set-off in the upper story. The peculiar angle arrangement of buttresses at the upper stage we give by a sketch plan. The principal point to remark is the way in which the outer pinnacles are connected to the angle-buttress of the belfry and the angle the connecting buttresses make. Externally the effect is most picturesque, and the whole design, with its low octagon pyramid or roof and angle-turret, is one worthy of study and adoption. The window tracery is similar to that at Cheddar. There is a fine old Perpendicular nave of six bays (covered by a very perfect wooden roof, with panels of varied design), restored aisles, and a low chancel. In the front of tower there is a large window of the usual Perpendicular type over doorway. The next stage has three canopied niches, a window over, with clock. The octagon turret and spirelet at N.E. corner is very much like that at Cheddar, the semi-octagon on the north side being joined to the buttress, and of the same projection. The walk from Shepton to Evercreech is about four miles, and a pleasant road.

The tower of Langport Church presents another characteristic example, in which the upper stage is set back a little from the lower walls, and has the triple windows and pinnacles, as at Banwell, Cheddar and Shepton Mallet. The angle buttresses to this stage spring from the weathering within the pinnacled heads of the lower buttresses. The proportions and the whole outline of tower are particularly pleasing. The canopied niches and window on the middle story are well grouped, and with the window and doorway of the lower story present the usual features of towers in this county.

THE ARCHITECTURAL ASSOCIATION.

THE first ordinary meeting of the Association for the present session was held on Friday evening at 9, Conduit-street, the President, Mr. Leonard A. S. Stokes, in the chair. Messrs. P. E. Newton, J. M. Sharman, J. M. Cream, S. Reddy, C. A. Sharp, A. Harston, E. A. Toombs, and L. Gough were elected as members. A vote of thanks was passed to the Entertainment Committee, for their efforts in connection with the successful *conversazione* a fortnight previously, the names of Messrs. Burrell, Cresswell, and Earle being specially mentioned. A vote of thanks was also passed to the executors of Mr. E. C. Ayton-Lee, Messrs. Walter Lonsdale and C. Henman, for a donation of 27 books from Mr. Ayton-Lee's collection to the library. It was decided to adjourn the consideration of the report and balance-sheet for a fortnight.

THE INAUGURAL ADDRESS

was then delivered by the President, who in his opening remarks referred at length to the manner in which the Special Report on the Working of the Association presented last session had been "hung up" till this session, after having been adopted by the general body of members. Their present position was that they, as an Association, had passed a series of resolutions stating that certain changes in their methods, &c., were desirable, but had not as yet made any alterations in their rules. Mr. Stokes continued: Everyone in this Association is proud of his profession, and wishes to see it take its proper position before the world. Architecture is a fine art, and an architect an artist. Architecture is also essentially a useful art, and an architect a utilitarian. Architecture is, again, a constructive art, and an architect a constructor. Now a man may be born an artist, and unless he is endowed with artistic instincts he will never make an architect; but I doubt if many men are born utilitarians, or constructors; but, even if they are, technical education will develop their powers in the same way that artistic surroundings and sympathetic associations will stimulate an artistic temperament. From this we gather conclusively that an architect requires a special education or training, and the only point that there can be any difference of opinion upon is as to the amount and nature of such education or training. One form, and a certain amount of training, has hitherto been obtainable at this Association, and if you think it is the right form, and of proper quantity to meet the case, don't be persuaded to change; but if, on the other hand, you agree with your committee's report on education, and think the form capable of improvement and the quantity somewhat scanty, then why not go in for an improvement as proposed, at the expense even of old associations and traditions? The Association is not even now carried on in the way it was originally intended, and a body like ours cannot remain stationary. It must move with the times, otherwise it will be deserted. Here we might ask ourselves how it is that, with hardly an exception, all our classes show a falling off in popularity during last session, and for the matter of that during the last two or three sessions. Is it because the classes are not so good as they were? I think not, for they have been more ably conducted than ever; but perhaps it is that something more is now required than is supplied by our classes, something more in touch with the times and less haphazard than some of our instruction is. Personally I admire and agree with the originators of the mutual system, and I can conceive few things more interesting and instructive for men of a certain standing than meeting with their fellows on equal footing, and forming classes, where good-natured criticism and debate formed the method of gaining and imparting information. This, however, is almost a thing of the past, neither is it suited to the younger men, but it is to be hoped that what little remains of the old system will be jealously preserved. The great majority of our classes, however, are not worked on this principle. There is an art in imparting knowledge which is not possessed by everyone; but everyone who has that art should be encouraged in a substantial fashion to work in forwarding the cause of architectural education. There are some who think that the fees that were named in the Education Report as fair remuneration to the instructors and lecturers were quite inadequate for their purpose, and I am inclined to agree with them. At the same time, in the first place, these figures were only suggested as average amounts; and, in the second place, at first the supply of good teachers might be so small that high fees would be out of place, at any rate until the teachers had proved themselves efficient. If I am stating the case too strongly in favour of change, it is only because I cannot find arguments to produce on the other side. If the Association does not supply proper teaching, other societies must, and will. If they do, the Association must be prepared to go to the wall. At King's College already fresh life is apparent, and, together with the Carpenters' Company, great things are to be done. At Edinburgh the architects there have presented a memorial to Her Majesty's Commissioners for the Scotch Universities, asking for the establishment in the University of Edinburgh of a curriculum of architecture, in which they refer to the Architectural Association. Professor Roger Smith, in his opening lecture at University College the other day, called attention to our proposed curriculum, and while criticising some details, spoke not unfavourably of the scheme as a whole. The professional Press, too, has without exception spoken favourably of our proposals, devoting a considerable space to leading articles and reports of our meetings. On the other hand, we are told that we are tending too much towards an academic course, and that the individuality of our future members will be lost, and thus the glorious freedom of our national architecture impaired. I fail to see how a little more system in the training of our students will lessen their individuality. The present system of pupilage remains quite unaltered; in our proposed course all we ask for is that pupils and improvers may be allowed proper time to attend the classes at the Association. For this class of members we are anxious to establish a course of day classes, so as to relieve, as far as possible, pupils from any large amount of evening work. I fail to see that the curriculum is likely to absorb the individuality of our members, the scheme being so elastic that the individual tastes and tendencies of students will be encouraged and developed, and not compressed into one mould, as in some of the foreign schools. We are all agreed that a liberal education, if not absolutely necessary to an architect, will be found of the greatest help to ninety-nine out of every hundred. This is felt so strongly by some that they have already offered us the help of their purses—Mr. Florence offering us a hundred guineas to improve our library, and Mr. W. H. Seth-Smith a guarantee of fifty pounds a year for three years if we will start our new curriculum; and I have little doubt but that many others will come forward when they see that we really have made a beginning, or are, at least, determined to make one. The one point in our proposals of last year that I consider of the least real importance, is almost the only one which met with any serious opposition. I refer to the proposal to raise our annual subscription. I trust we shall be led by our common sense, and not by feeling, for the question is really a very simple matter of £ s. d. If you think certain changes in the working of the Association—e.g., the opening of the library in the daytime, and the employment of a paid assistant secretary—desirable, are you prepared to put your hands in your pockets and produce the necessary funds? If not, you cannot have them—i.e., unless you are ready to forego some of the other advantages you now enjoy, such as the conversazione, or soirée, or both. Another way out of the difficulty was proposed by Mr. Cole Adams—viz., that the subscription of all incoming members should be raised, that of existing members remaining as at present. I regret now that this suggestion was not adopted, as, with a little care, the money thus produced would prove enough for us to introduce what we want by degrees, instead of all at once, as was intended. It is not even now too late to adopt this course, which has some advantages, and I think it not improbable that this course may be laid before you, by your committee, when the proper time comes. Another point is, the proposal that we should vote by means of voting papers, and not by show of hands as hitherto, on subjects affecting the rules, &c., of this Association. At best it is a lazy way of voting; and the old-fashioned way of coming to the meeting and hearing the arguments on both sides of the question, and then holding up your hand either for or against it, is far more suited to our ways. I would suggest that we follow the example of the architects of Edinburgh, and memorialise someone. I am afraid it is no use our going to the University of London, as they probably would not listen to us, at any rate at present; therefore we had better go to the Institute and boldly ask it to either establish some course of architectural training itself, or to help us to amend and strengthen our methods so as to meet the requirements of the case. The Institute is practically pledged to do something more for *education* than it at present does; but if it will not help us, then we might summon a general conference af architects and get their support if possible, or at any rate hear what was to be said by them with regard to our proposed curriculum. The President referred at some length to the discussion on architectural education which took place at the conference of architects in 1887, quoting in detail from Mr. Cates, Professor George Aitchison, Babcock, and Roger Smith. Messrs. Arthur Hill, R. P. Spiers, A. Cates, Gotch, and Lawrence Booth, adding:—After all these papers, ten in number, each one advocating education, the meeting promptly passed four resolutions in favour of examination! It is hard to understand, but so it was. However, the time

has come when we all agree that something more than examination is necessary to insure the production of a creditable generation of architects. I am, you see, by no means alone in advocating a proper course of training for architects, nor in thinking that the Institute should bestir itself to provide, in some shape or another, such a course of training. I therefore once more press my suggestion that we should go boldly to the Institute, as it is the representative body of the profession, and ask the Council to either establish some course of architectural training itself, or help us to amend and strengthen our methods so as to meet the urgent requirements of the case.

Mr. John D. Sedding, in proposing a vote of thanks to the President for his address, remarked that he was entirely in accord with Mr. Stokes in his proposals for giving ample scope to young architects to avail themselves of the various educational agencies of the Association. It was to be regretted that it had been left to the younger men to provide the means of education for the profession. Development was the law of all life, and he felt that they must systematise their means of acquiring knowledge. He went further than many, and held that mere book-learning, or attendance at classes and lectures, in themselves were insufficient, and that to these should be added something of actual craft-knowledge. Architects, if they would properly support their claims to be considered artists, must consider the practice of some craft as an integral and necessary part of their training.

Professor Roger Smith seconded the motion, and said that if in his recent address at University College he had appeared to criticise the scheme for the improvement of the Association too critically, he was sorry. He regarded the proposal of the Special Committee as a whole as satisfactory, the weak point in that and the address to which they had listened being a tendency to look for material support from outside in carrying out the work. He would suggest that it would be well to endeavour to carry out part of their scheme the first year, and if it succeeded to undertake a second section, the third and last being reserved till they had tested the working of the proposals. He would strongly urge the younger men not to rely too much upon the assistance of the Institute, or any other body, but to act upon the maxim of great antiquity, "Heaven helps those who help themselves."

Mr. J. M. Brydon thought the Institute ought to help the Association in its new movement, and if a scheme which appeared to be reasonable were brought forward, he had no doubt the Institute would support it heartily. He, for one, cordially concurred in the proposals for the greater systematisation of education for young architects.

Mr. Reginald T. Blomfield drew a distinction between instruction and education, and said he feared architects did not, as a rule, follow up their studies in the same thorough way as did sculptors and painters. Architectural students ought to give greater attention, he thought, to the practice of figure drawing and modelling, and also to questions of professional practice.

Mr. Thomas Blashill and Mr. A. W. Earle also supported the vote of thanks, which was carried by acclamation, and briefly acknowledged by the President.

THE IMPERMEABLE BASEMENT OF THE NEW ADMIRALTY OFFICES.

A VERY important work in the rear of the Horse Guards is now being carried out by Mr. Webster, the well-known contractor for public works. It consists in the construction of the external basement walls of the new Admiralty Offices under the supervision of Messrs. Leeming and Leeming, the architects. The land springs are numerous and troublesome in this part of the ground, so much so that we know tubes of iron, perforated, were laid out beneath the surface of the Horse Guards Parade by the late Mr. Easton, C.E., for the purpose of draining the springs into the lake, from which the water is pumped to supply the Serpentine. Any plan, therefore, which did not grapple with this difficulty in sinking the foundations of the new buildings would have been decidedly defective. To give our readers an idea of the manner in which, by the adoption of Claridge's patent asphalte, the entire site has been rendered perfectly impervious to water, we may state that the whole area of the basement—a large rectangle measuring between 300ft. and 400ft. in length, and about 120ft. in width—has been excavated to a depth of about 25ft., and around this area a solid concrete retaining wall, constructed in thicknesses of from 16ft. at the bottom to 3ft. 6in. at the top, and slightly battered on the inside, has been built about 23ft. high. The bottom of this area and the footing of the concrete walls repose on the blue clay, which it is intended to cover with a bed of concrete 6ft. in thickness. Thus the walls and the bottom will form an immense tank, having an area left between it and the brick walls of the building. But the concrete walls would be useless without an impermeable application of asphalte. For this purpose, Claridge's Patent Asphalte Company have laid a damp-proof course through the entire thickness of the concrete walls, and have brought it up the outside to the ground level. Looking at the work from the outside of the walls, where they have been brought up from deep trenches, it resembles very much a huge ironclad vessel plated on the exterior. Instead of the usual mode of applying the asphalte in a liquid state to the walls, plates of Claridge's asphalte, ¾in. thick and about 2ft. by 1ft., prepared in a particular way, as hereafter described, are laid in cement, and pressed on the outer surface of the wall. These plates break joint. The edges of each plate, after they have become set, are bevelled, so as to form, in connection with the adjoining one, a ⋀-shaped joint, into which the liquid asphalte is worked, and makes a perfect and impervious joint. These plates of asphalte are prepared on tables, they are cut very truly at the edges, and the surface, which is imbedded on the cement walls, is made rough by means of brick chips the size of duck-shot, to insure suction. At all angles fillets of asphalte are put, and the whole work is being executed by the thoroughly skilful and workmanlike operatives of Claridge's Patent Asphalte Co. The building itself will be erected within this huge vessel of concrete and asphalte, and we may safely predict that it will be impossible for any water to enter. The extent of the surfaces covered are about 15,000ft. of damp-proof course and 30,000 vertical.

We have lately spoken of the absolute need there is to build submerged cases or tanks of concrete lined with asphalte of an undoubted quality in situations subject to land springs and underground moisture, and we have no hesitation in saying that the basement walls of every public or private building ought to be protected from periodical floods and over-charged sewers, by being built up within self-contained vessels of known impermeability, instead of being constructed in contact with damp soils. This system has also been advocated by Colonel Galton, R.E. To one or the other of these recommendations the adoption of asphalte at the Admiralty new buildings site may be due.

WOOD-BLOCK PAVEMENTS.

WOOD PAVING seems to have been favoured by metropolitan and local authorities, for it has now replaced a large number of the old macadam and asphalte pavements. In Paris and in American cities this sort of paving has been largely followed; in America, indeed, the experience has been rather unfavourable to wood on account of the imperfect methods of laying and want of care. Our London experience has been the most reliable. Taking a recent estimate of the length of the streets, it appears there are quite 2,000 miles, but of this total something may be struck off for new streets not adopted by local authorities. Macadam five years ago represented 573 miles, or about one-third of the aggregate length of carriageways. Flint and gravel was estimated at 798 miles, granite 280 miles, wood 53 miles, and asphalte 13 miles. During the last ten years nearly a million square yards of wood has been laid in London. From London Bridge to Chelsea wood paving may be observed; but there is evidently a very great difference in the wear of some systems, and the material adopted. The other day we saw a Lambeth thoroughfare Oakley-street, being paved with blocks of jarrah, a wood like mahogany in colour, hard and heavy, from Western Australia, and a very durable-looking pavement it seems. We shall watch with much interest the wear and maintenance of this new block. Baltic and Dantzic fir, pitch pine, elm, beech, have been tried, as well as blocks cut to different shapes. We believe hitherto the larger portion of the pavements has been laid with Swedish yellow deal, or red deal; but of course it would be impossible to say or to guarantee that the best Swedish or Baltic timber is put down after the blocks have been subjected to the "pickling" process. One authority has spoken well of Swedish yellow deal (Gothenburg's "Thirds"), if the blocks are cut from evenly-grained, well-seasoned, and sound deals; but, of course, in large contracts it is impossible to insure the constant supervision necessary for the rejection of inferior blocks. We are afraid that one or two good systems of laying have suffered from the employment of sappy and knotty blocks that have been allowed to be laid, and that the greatest enemies of the companies who lay pavements are those in their employ who allow inferior materials to be used. A harder and more durable wood is pitch pine; but its cost is greater. It has increased abrasive power, and is drier and cleaner than deal. Pavements of this description have been laid in the City and in Chelsea, and the annual vertical wear of the blocks is very small. Why should not, we ask, these harder blocks be used in streets of large traffic? Economy would be insured by the adoption in the first place of the hardest material.

Another point is treatment. We are not sure whether the "pickling" or dipping in creasote oil to which paving blocks are subjected is an advantage; indeed the experience of many leads them to the conclusion that the "preservative process," whatever it is, is a mere disguise, a means of putting inferior wood blocks into the market and of preventing detection. Many of the repaved portions of the London streets are laid without a joint or space between the blocks for wooden strips, and we think the plan desirable for some reasons. The foothold is largely connected with the jointing of the blocks. The cement joint is no doubt one of the better kinds, as it does not easily wear down below the wood surface, and it is hard and prevents the soakage of moisture just as much as the mastic joint, which appears to be of doubtful value in keeping the edges of the blocks from crushing or wear. Experience with the close-jointed wood-block paving may solve the problem.

RHIND LECTURES IN ARCHÆOLOGY.

IN the Lecture Hall of the National Portrait Gallery, Edinburgh, on Monday, Prof. Duns, D.D., F.R.S.E., delivered the first of the present year's series of the Rhind Lectures in connection with the Society of Antiquaries of Scotland. Sir Arthur Mitchell presided. Prof. Duns stated that the subject of the course of lectures, of which the present was introductory, was "Scottish Archæology and Natural Science," and that he would seek to give an exposition of the relations between them. Archæology should take rank alongside the sciences, notably that of geology, in respect that the pre-historical and remotely historical remains which it presented shed light on the probable history, social habits, industrial pursuits, intellectual attainments, and some of the moral characteristics of the early families of Scottish men. It had perhaps suffered from its isolation from all the contemporary branches of science. It would be foolish to try to divorce archæology from philosophy, and make it no more than a mere accumulation of bare facts; it was when observation allied itself to philosophy that bare information became vitalised into firm and established truth. Regarding geology, no efforts had been made to pursue it as a science in Scotland till towards the close of last century, though so early as the twelfth there had been certain superficial distinctions made as to various deposits of turf. For any serious exposition of physical geology or palæontology we must come down to 1785, when Hutton published his "Theory of the Earth," before we began the subject of Scottish geology. After this dawn came Charles Lyell, John Fleming, James Nichol, Charles M'Laren, and Hugh Miller—all, with perhaps the exception of Nichol, accomplished antiquarians as well as skilful geologists, and a band of men of whom Scotland might well be proud. Until a comparatively recent date the lists of tertiary rocks were regarded as marking the close of recent geological times. Some of the later deposits, however, had come to be characterised as geological under the term post-pliocene or quaternary. In general they might be called pre-historic and

recent, with the twofold classification geological and biological, and it was at this point that geology found footing in antiquarian research. In this domain of inquiry, too, would arise the question of the antiquity of man. So far as the first appearance of man in Scotland was concerned in its bearing as a question in anthropology, it was a question foreign to his present task, and he committed himself to no view as to man's origin. The quaternary deposits were classified into aqueous, glacial, igneous, and sub-aërial.

WATERWORKS REGULATIONS.

THE regulations of the Liverpool Corporation Waterworks form a good model for other works. With these rules the Corporation publish the names and addresses of such plumbers as they may approve of who undertake to do the work in compliance with the regulations, and the said plumbers are responsible to the Corporation for work they execute. All fittings are required to be tested and stamped by the authorised officer before being fixed, and fees are charged of 2d. for bib and stop taps, 3d. for ball taps, 6d. for closet cisterns and ball cocks. Standard fittings are exhibited in the stamping office, though any other fitting that is proved to be satisfactory may be stamped. Service pipes laid or fixed below ground are to be of lead, and the joints, whether above or below ground, are to be "wiped" joints. Service pipes underground are to be at least 2ft. 6in. below the surface. The diameters for lead service pipes are to be as follows:—For one house not exceeding £20 per annum rateable value, $\frac{3}{8}$in.; for house above £20, but not exceeding £70, or for six houses not exceeding £13 each, $\frac{1}{2}$in. diam.; for one house above £70, or fourteen houses not exceeding £13 each, $\frac{3}{4}$in. diam. Blocks of offices or houses on the same building, and belonging to the same person, are to have separate pipes and fittings. The following regulation is important: "Where two or more houses, of a rateable value exceeding £13 each, are supplied from one cistern, a leading pipe from the cistern must be laid in the back passage, and separate branches taken therefrom into each house." Certain minimum weights of pipes are given per lineal yard. If supplied from a cistern:—

$\frac{3}{8}$in.	diameter	4½lb. per yard.
$\frac{1}{2}$in.	,, ...	5lb. ,,
$\frac{3}{4}$in.	,, ...	8lb. ,,
1in.	,, ...	11lb. ,,
1¼in.	,, ...	13lb. ,,

Pipes under pressure from the main:

$\frac{3}{8}$in.	diameter	7lb. per yard.
$\frac{3}{4}$in.	,, ...	11lb. ,,
1in.	,, ...	15lb. ,,
1¼in.	,, ...	18lb. ,,

Every separate service pipe is required to have a stop cock-and box, which will be fixed outside the private premises at the expense of the Corporation. On the leading pipe from the main a tap is to be placed in each house, in order to draw water for culinary purposes, without passing through the cistern. Where there is a bath or hot-water apparatus the storage cistern must hold less than 50 gallons for each house, and in other cases it is not to be less than 25 gallons. Cisterns lined with lead are to have the latter not less than 5lb. to the foot. The other regulations require cisterns to be accessible, bricked round or otherwise, incased to prevent the action of frost. Several less immediate, but no less important, provisions are introduced respecting pans or basins of closets, baths, steam-boilers, hydrants, and steam-fittings, which ought to have the attention of the profession.

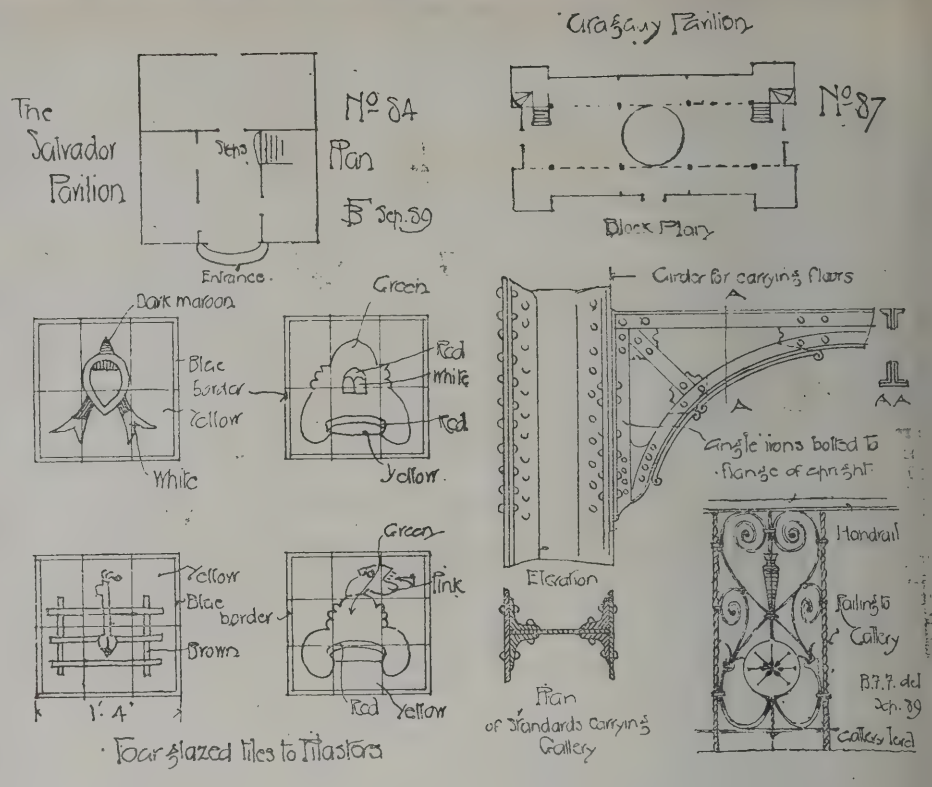
CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—XVII.

By Banister Fletcher, Jun., A.R.I.B.A.

THE SALVADOR PAVILION,

WHICH is situated next to Costa Rica, in front of the vestibule to the Palais des Arts Litéraux, is one of the striking buildings in the Exposition (not, however, using that word in its best sense) as far as decoration. About its architecture I know nothing, but a guide-book gives the following:—"Il est d'une architecture originale dont le double caractère arabe et espagnol donne une idée assez precise des constructions du pays." After seeing this building, all one can say is that if this is so, the Salvadorians are fond of colour, but colour of a very crude type. The exterior is composed of pilasters of glazed tiles, whose tints are principally yellow and blue (see No. 84), with architrave, &c., of the same material; this is repeated to the first floor. The intermediate filling-in the ground floor consists of horizontal stripes of blue and white glazed tiling. Between the pilasters on the first floor are panels of glazed tiling representing sea-scapes.

The walling of the building is of the pan-de-bois type (brick-nog partition) and plaster facing. It may be mentioned that the devices with which the tiles to the pilasters are ornamented are the signs of a dead language (Nohualt) of former conquerors of Central America, and M. Pector, the president of the committee of organisation of this country, had these reproduced.



THE "GLOBE TERRESTRE AU MILLIONEME."

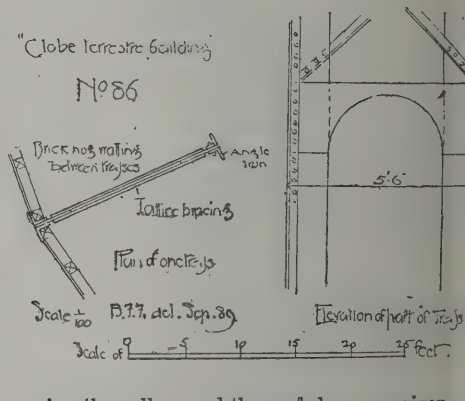
The building which shelters this huge model of the earth $\frac{1}{1000000}$ full size, is the object of our study, although the model itself is well worthy of inspection.

The building is a duodecagon on plan (from *Le Génie Civil*, No. 85), is composed of six whole trusses or 12 half-trusses, which unite at the top in a ring composed of solid web and angle irons. The trusses themselves are of extremely light construction, formed of webs separated from each, and angle irons, between the trusses which rest on pile foundations is the walking way for the public, which is further increased by a balcony supported by brackets from the inside of the trusses; this walking way has a gradual slope from the bottom to the top to permit of the model being seen at all points. The back of the principals go up as shown and form a cornice and gutter. The three front bays are projected to the front to form the principal entrance, and contain on each side of entrance a flanking tower, one of which contains a staircase and the other a lift. The filling-in between the trusses is in "pan-de-bois," or brick-nog walling (see No. 86), and windows are introduced into these for the lighting. The trusses above the galleries are held together by horizontal purlins attached to the outer part of the truss. The staircase leading to the top immediately over the North Pole is held up by rods suspended from the principal purlin or ring, into which the principals are framed (see drawing). The whole is covered by a ventilating lantern.

The building is constructed on much the same principle as the "Panorama du tout Paris," by M. Yvon, architect.

URUGUAY PAVILION.

Proceeding along the Champ de Mars by the Avenue de Suffren, we come upon a less ambitious group of South American edifices, and firstly Uruguay (No. 87). The plan is simple, consisting of one large hall, with balcony at first-floor level, supported on lattice with arches riveted to the back of the main piers. There is a central dome in glass on four pillars, and a bay on each side, as sketched. The system of decoration to the columns is grey-blue, and the rivets are painted gold throughout. The dome is carried on a low pointed trellis-work arch, the spandrels being filled in with paintings on plaster. The ironwork is screwed together in large pieces, to take down at the end of the Exposition, and it is to be re-erected in Uruguay. The standards



carrying the gallery and the roof above are given above, as also a rough note of a very elegant railing to the gallery. Externally the iron framework is filled in with terracotta of a salmon colour, and the ironwork being painted grey-blue, the building has a light and graceful tone which is very agreeable. The small towers at each angle are carried up, and have glass cupolas over.

THE DOMINIQUE REPUBLIC

consists of a wooden framework filled in with brick-nogging and plastered, the studs showing, and occupies about 2,150sq.ft. These main wooden studs are painted grey with red chamfers. The plan consists of one large room. The building is tile-covered, and the gables have terracotta barge-boards, reminding one of the lodges at Hatfield.

The Town Council of Glasgow have instructed a special sub-committee to consider and arrange as to offering prizes for competitive designs for workmen's dwellings, these designs to be exhibited in the East End Industrial Exhibition along with models of the successful designs.

Scale of 0 1 2 3 4 5 6 7 8 9 10 11 12 Metres

No 85

Fig. 1.—Coupe

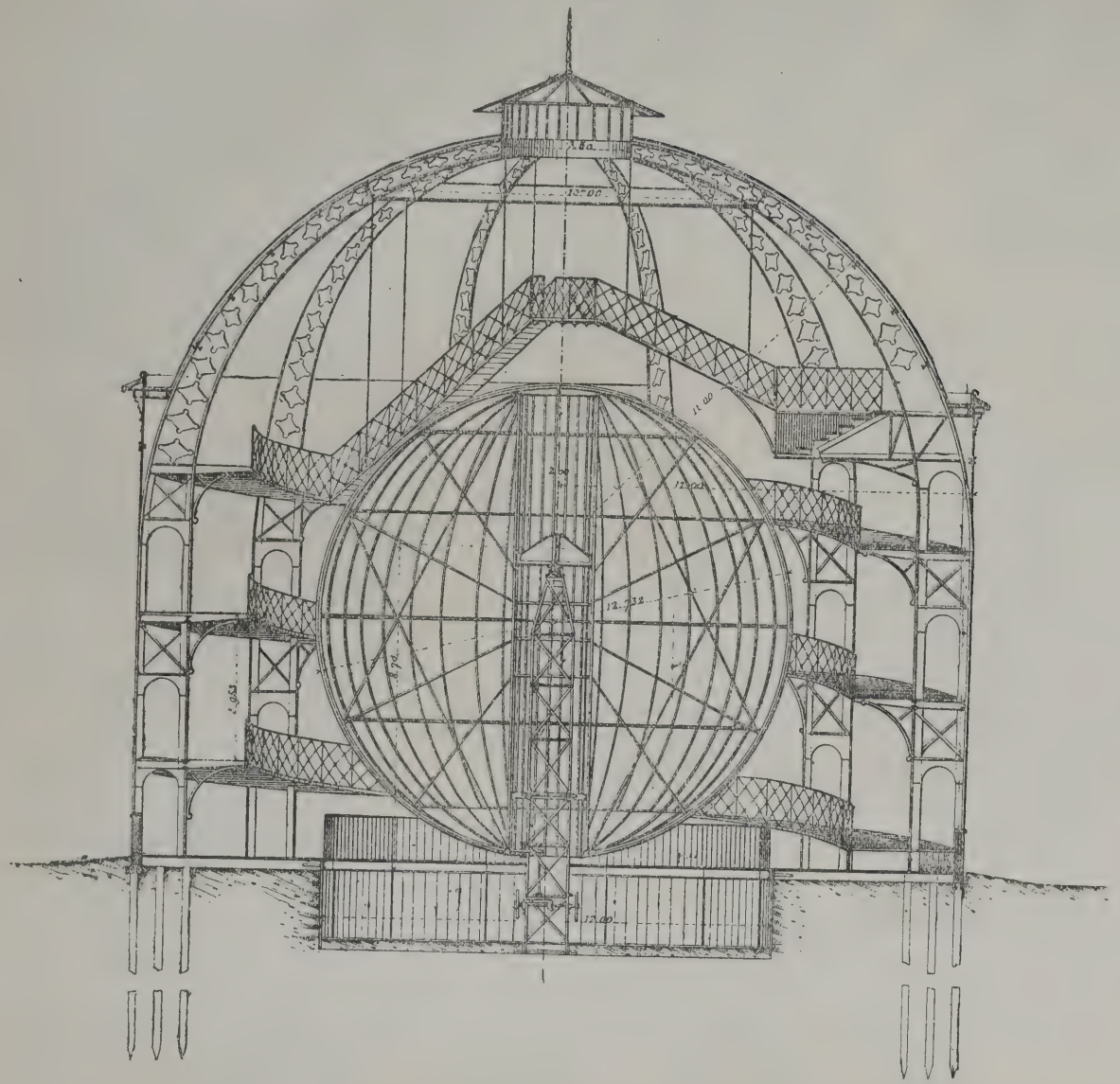


Fig. 2.—Façade du Bâtiment

Scale of 0 1 2 3 4 5 10 Metres

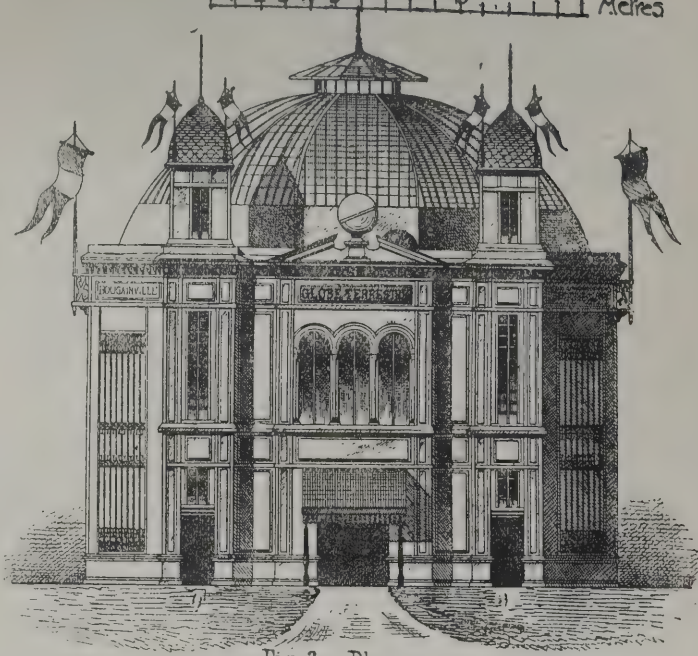
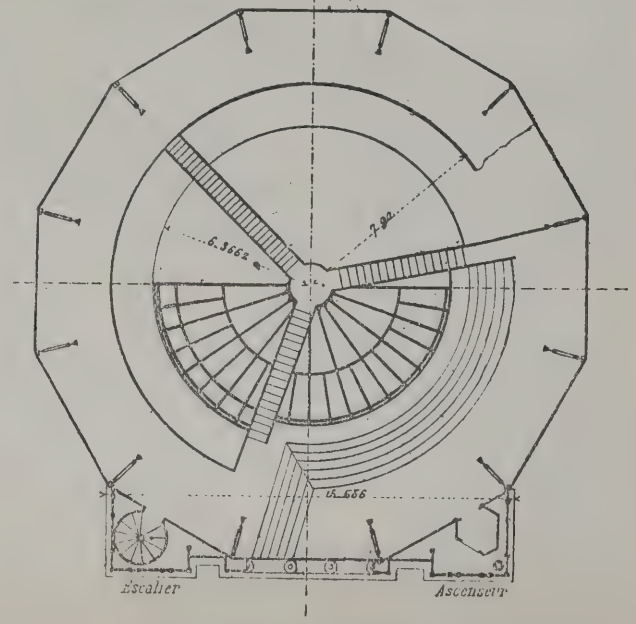


Fig. 3.—Plan



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ILLUSTRATIONS.

BERWICK LODGE, HENBURY, NEAR BRISTOL.—CHESTERFIELD HOUSE, GREAT TOWER-STREET.—CONTEMPORARY BRITISH SCULPTORS.—DURHAM CATHEDRAL FROM THE NORTH-WEST.—A BIT OF OLD NEWCASTLE.—IMPERIAL BUILDINGS, ST. MARY-STREET, CARDIFF. — SWEDISH FONTS.

Our Illustrations.

BERWICK LODGE, HENBURY, GLOUCESTERSHIRE.

This residence is beautifully situated, overlooking the river Severn, and commands a view towards the Bristol Channel. The present building is erected upon the site of an old house, and is surrounded by fine trees and shrubs. The materials used in construction are Cattybrook bricks with Bath-stone dressings. The internal fittings are of oak. Mr. John Hutchinson, of Nottingham, is the builder, assisted by Mr. Scull, of Bristol, for the plumbing, and Lewis and Sons, of Clifton, for the painting. The drawing was in this year's Royal Academy.

CHESTERFIELD HOUSE, GREAT TOWER-STREET, E.C.

These premises occupy a conspicuous position in this fine thoroughfare, and comprise an extensive and direct-lighted basement occupied as a restaurant, while the ground-floor is occupied by shops; first, second, third, and fourth floors by commercial offices; and the fifth floor by housekeeper's apartments. The various floors are served by one of Messrs. Waygood's hydraulic ram lifts. Constructional ironwork has been extensively used throughout the building; and wood block flooring has been used in the corridors as a noiseless paving. The ground story of the elevation is carried out in grey and red granite; the whole of the upper portion in Portland and Beer stones. The contractors were Messrs. Perry and Co., of Bow, and the architect Mr. Delissa Joseph, F.R.I.B.A., of 17 and 18, Basinghall-street, E.C.

CONTEMPORARY BRITISH SCULPTORS.

(See description on p. 594.)

DURHAM CATHEDRAL FROM THE NORTH-WEST.

The two artistic photographs which we reproduce to-day were shown this year at the Crystal Palace Photographic Exhibition by Messrs. Auty and Ruddock, of Front-street, Tynemouth, who have supplied the prints for our pages herewith. The first of these pictures represents the three towers of Durham Cathedral, the central one of which is 214ft. high, those at the west end being about 140ft. from the pavement. James Wyatt, the fashionable so-called "Gothic" architect of the last century, had the western towers in hand for about 20 years after 1775, when he put the fabric through a "chiselling process," no less than 3in. or 4in. of the surface being in some places removed, at a cost of no less than £30,000. The stonework thus taken away amounted to 1,100 tons weight. This precious "restoration" accounts for the absence of vigorous outline so marked in this cathedral since it was thus "done up." The great entrance to the church used to be at the west end; but as early as 1194 Bishop Pudsey erected the Galilee, since which time the north doorway has been the principal portal, with its rich and deeply-recessed Norman archways, in which Decorated-period ornaments were afterwards introduced. The comparatively modern battlemented parapets and pinnacles surmounting the western towers are said to have Italian details and mouldings. Most of the old Norman window openings are filled with mullions and tracery of a later period. The splendid position of the cathedral overlooking the town adds greatly, of course, to the importance of "Durham's massy fane." We gave two interior views of this church in the Building News for March 4, 1887, and August 3, 1888.

A BIT OF OLD NEWCASTLE.

This picturesque photograph represents the Castle Garth, at the head of Dog Loup, or Dog Leap Stairs, as it is now called. In the distance the crowning finial of the western tower of St. Nicholas most charmingly completes the picture. The word "Garth" as here used includes really all the castle precincts, and those who dwelt within its confines were as completely free from the jurisdiction of the mayor and burgesses as if they lived in the Orkney Islands. This was in the days of King James. In 1768 the Castle Garth was united to the parish of St. Nicholas; but the power of the trade companies was then rapidly declining, and the importance of the Garth as a refuge was passing away. The persecution to which the inhabitants were at one time subjected, and the privileges they enjoyed, despite the nearness of their adversaries, led to the establishment of a custom which, even sixty years ago, was not extinct. "Every stranger, immediately after opening a shop, is invited to a general meeting of all the dealers and chapmen within the precincts and liberties of the Castle at a public-house. Each individual pays sixpence, and the evening is spent in promoting good fellowship." Ruin has almost worked its full measure on many of the existing buildings in this part of the city, which, however, for that very reason, makes these remnants of the past all the more interesting. Inevitable progress and modern "improvement," before many years have gone, must lead to their removal, and therefore records, such as we give to-day, obtain more than a passing interest. We gave several drawings of Newcastle in the Building News for October 3 last, when reviewing "Vestiges of Old Newcastle and Gateshead," by Messrs. W. H. Knowles and J. R. Boyle, F.S.A., a book full of exceedingly curious and useful information.

IMPERIAL BUILDINGS, ST. MARY-STREET, CARDIFF.

This very large block of commercial premises is one of the most important additions, erected within recent years, to the street architecture of Cardiff. The basement is occupied entirely by a range of shops, and the central portion of the main building is devoted to an hotel, with offices and chambers in the other parts. The façade is in stone, with the oriels executed in timber, enriched with sgraffito plaster-work. The domes are covered with lead, and the principal roof is a flat behind the parapet. Messrs. Edwin Seward and Thomas, of Cardiff, are the architects from whose designs the buildings have been carried out.

SWEDISH FONTS.

In the historical collection of the Museum at Götoberg are a number of fonts rescued from old churches, and two casts of some which have been destroyed. They are interesting, not only for their own peculiarities, but because the history of them appears to be well known. For all the facts I am able to give I am indebted to Herr G. Housewitz, the curator of the Museum.—*Askim*, in Götebergs Vär, is from a church destroyed by lightning, when the font was much damaged. Total height 3ft.; width of bowl 2ft., height 1ft. 4in.—*Askums*, in Bahuslehn: The monsters and pedestal are extremely rough, and suggest an early date; but the ornament of the bowl seems not earlier than the 15th century. Total height 3ft.; width of bowl 2ft. 6in., height 11in.—*Finnekumla*, Vestergötland: A font of the 13th century. An inscription in Runic characters on the base is read, "Andrew made me." Total height 2ft. 11in.; width of bowl 2ft. 2in., height 11in.—*Karreby*, in Bahuslehn: This font belonged to an older church at Norrum by Oker, and the Runic inscription on it has been read by Professor Stephens, of Copenhagen, thus—"Rada sa er kaun, a mit Norkirkia, Lafrinzt gerthe i Okr"; or, "Guess me who can, nor church owns me, Laurence in Oker made me." This is a cast. Height 1ft. 2in.; width at top 1ft. 10in.—*Monstad*, Vestergötland: This is in two stones—the plinth of a grey stone, and the stem and bowl in a deep-red sandstone. The ornaments of peculiar crosses in alternate panels are deeply, but very roughly, cut in. No date is assigned to this. Total height 2ft. 6in.; width of bowl 2ft.—*Refvesjo*, in Vestergötland: This is a cast. The interlaced pattern on the base, which is deeply cut in, looks like 13th-century work; but the elegant scroll-work on the bowl seems later. Total height 2ft. 7in.; width of bowl 2ft. 2in.—*Risteröd*, near Undevalla: Said to be of the 14th century, but looks earlier. The bottom has been broken. The stone plinth appears to be the original one. Total height 2ft. 4in.; width of bowl 1ft. 10in., height 1ft. 5in.—*Skredswik*, in Bahuslehn: This curious font, assigned to the 13th century, is much broken, and the bowl held together by an iron band. The stem is trefoil-shaped, and in the plinth is a monster, and a trace of a human figure lying by its mouth. The arcade and figures on the bowl are in very low relief. Total height 3ft. 2in.; width of bowl 2ft. 3in., height 1ft. 4in. The square plinths showing in some of the sketches are only the wooden stands on which the fonts are placed for exhibition in the Museum.—J. Tavenor Perry.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

The Toronto Architectural Sketch Club.—The second annual meeting of this club, which is composed of architects, artists, draughtsmen, &c., was held on Monday, October the 6th, when the following officers were elected:—President, Mr. S. G. Curry; vice-president, Mr. A. H. Gregg; secretary, Mr. C. H. Acton Bond; treasurer, Mr. A. Clarence Barrett; directors, Messrs. H. W. Matthews, Henry Simpson, and W. R. Mead. The prospects for the season are very gratifying, and with the general enthusiasm of the members, success is pretty well assured.

CHIPS.

A new Metropolitan police-station is about to be built at Kilburn at a cost of £6,000. The contract has been taken by Mr. H. L. Holloway.

A large block of board schools is being commenced in the Woodbourn district, Sheffield, and will cost about £11,000. Messrs. Wightman and Wightman, of Sheffield, are the architects, and Mr. J. Morton, Lord-street, in the same town, the builder.

A new branch bank is being erected for the Birmingham and Midland Banking Company, in Kirkgate, Leeds, from designs by Mr. William Bakewell, of that town. The works are being carried out by local contractors.

At a meeting held at Salisbury last week it was decided to build a new district church on a site known as Weeping Cross Tree. The Bishop proposes that the church shall be built to seat 500 persons, at a cost of about £5,000.

A hospital is about to be built at Billericay, Essex, for the local sanitary authority of that district, and at a cost of £1,000. Mr. A. T. G. Woods, of Brentwood, is the architect, and Mr. A. Ansell, of Hatfield, Broad Oak, is the builder.

Memorial stones of an addition to the Printers' Almshouses at Woodgreen were laid on Saturday by the Baroness Burdett-Coutts and Mrs. W. H. Collingridge. The original portion of the houses was opened by Earl Stanhope in 1856, and consists of twelve suites of apartments. Two detached wings were added in 1871; but unoccupied spaces were accordingly left between the original block and the two wings, which are now to be filled up.

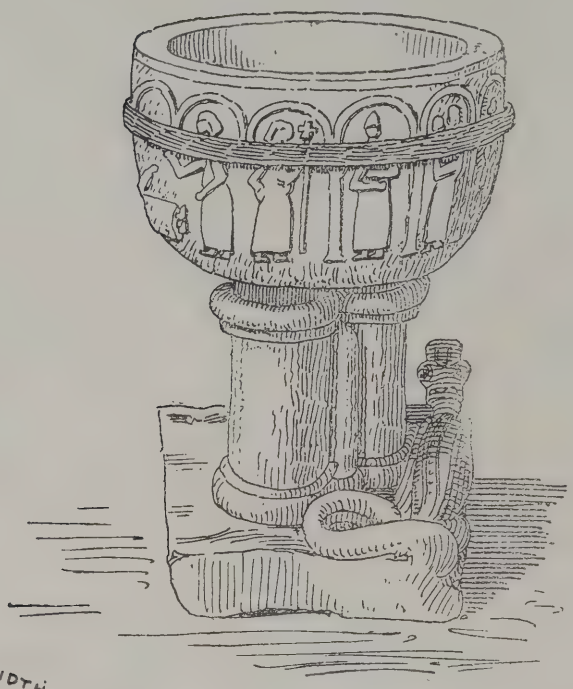
An inquiry was held at Carlisle on Monday and Tuesday of last week, before Mr. Thomas Codrington, M.I.C.E., an inspector from the Local Government Board, as to an application from the city council of Carlisle to the Cumberland County Council to have eleven roads within the city declared main roads. Mr. Howard Smith, the city surveyor, gave evidence for Carlisle, and his evidence was supported by several members of the corporation. For Cumberland the chief witness was Mr. G. J. Bell, county road and bridge surveyor, who declared he saw no reason why any thoroughfare within the city, however recently disturnpiked, should be maintained at the cost of the county generally.

FONTS FROM SWEDEN

SKETCHED BY J. TAVENOR PERRY

SKREDSWIK

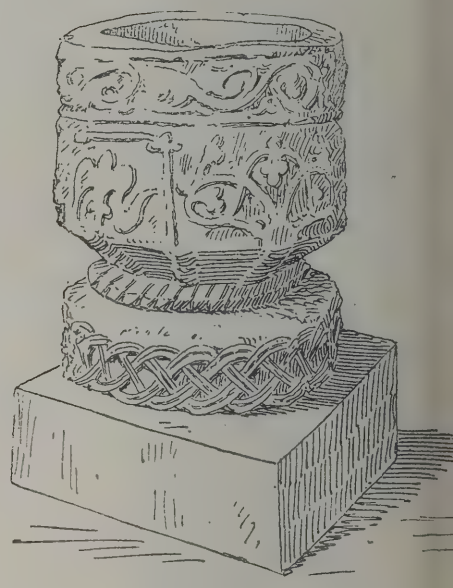
BAHUSLEHN SWEDEN



WIDTH OF BOWL 2'3" HEIGHT 1'4" TOTAL HEIGHT 3'2"

REFVESJO

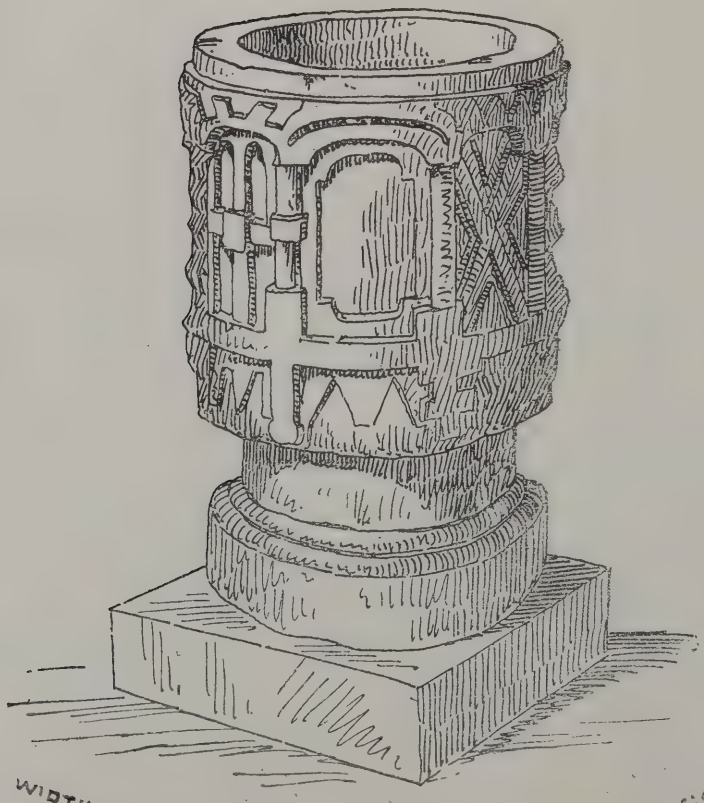
VESTERGOTLAND SWEDEN



HEIGHT 2'7" WIDTH 2'2"

MÅNSTAD

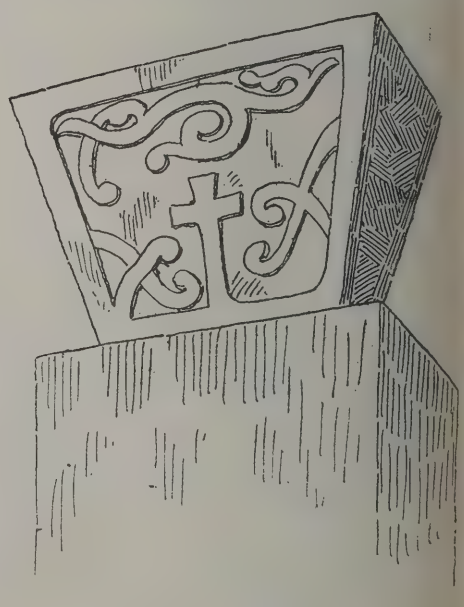
IN VESTERGOTLAND SWEDEN



WIDTH OF BOWL 2'0" HEIGHT 1'9" TOTAL HEIGHT 2'6"

KARREBY

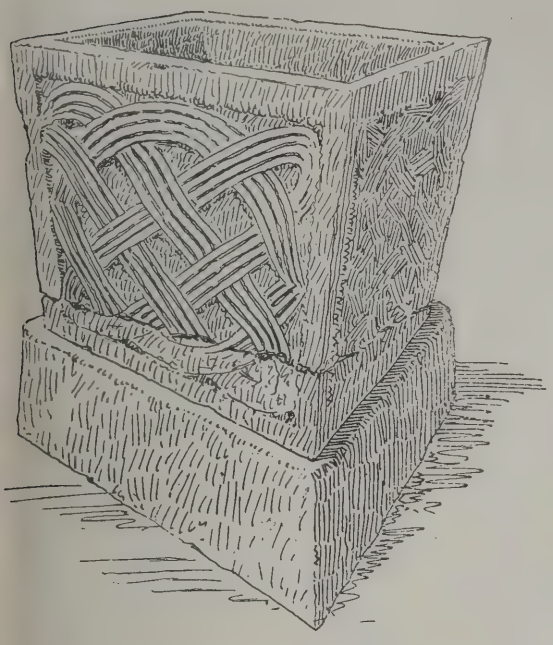
BAHUSLEHN. SWEDEN



WIDTH 1'10" HEIGHT 1'2"

RISTEROD

NEAR UNDEVALLA SWEDEN



HEIGHT 1'.5" WIDTH 1'.10"

ASKUM

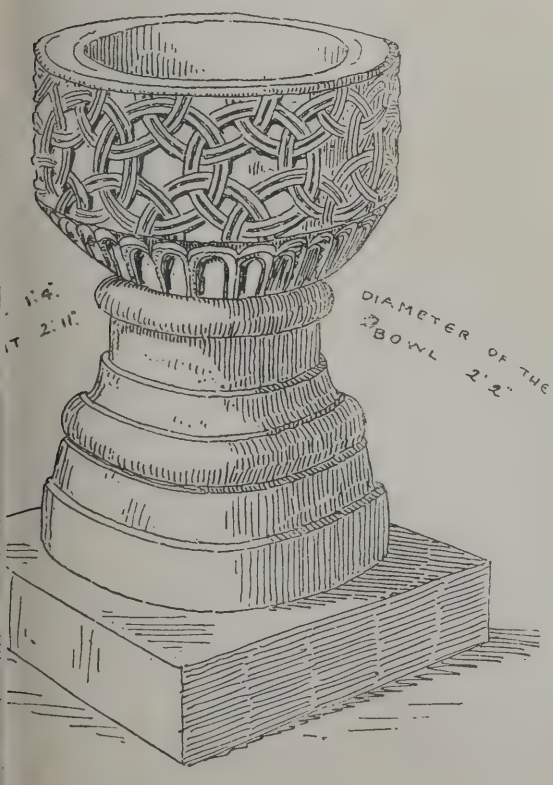
BAHUSLEHN SWEDEN



WIDTH OF BOWL 2'.6" HEIGHT 11" TOTAL HEIGHT 3'.0"

FINNEKUMLA

VESTERGOTLAND - SWEDEN



1'.4"

T 2'.11"

DIAMETER OF THE BOWL 2'.2"

ASKIM

SWEDEN



HEIGHT OF BOWL 1'.4"

TOTAL HEIGHT 3'.0"

DIAMETER OF BOWL 2'.0"

WAYSIDE NOTES.

SUBURBAN residential life has never possessed any attraction for us. If not actually in the pure country, we would as soon be in the thick of London, in spite of fog and such like urban joys. Over and above other objections, certain suburbs appear particularly uninviting. I refer to such as, being in an undeveloped state, and not more definable as town or country than the hobbledehoy is to be described as man or boy, become the site of divers brick-making operations. Not that I object to bricks; as an architect I regard the modest lump of baked clay with a brotherly affection, and consider the ring of a bricklayer's trowel a species of music second only in point of cheeriness to the chirp of the cricket on the hearth. Neither do I consider the outlook over a brickfield utterly void of picturesque qualities. Indeed, there are brickfields wherein the artist may do worse than pitch his camp for an hour or two. The broken nature of the ground, the fantastic shapes of pugging mills, &c., the perspective of many receding, inclining troughs, added to the wealth of colour, harmoniously blended, in the new baked clamps, afford subjects for pencil and brush that will not be despised by the appreciative sketcher. "Early Morning in an Old Brickfield," I remember as a little woodcut in an art magazine some years back, possessing more than an average amount of true sentiment in its composition and chiaroscuro. In walks in pure country rich with autumnal colouring and effects I have turned aside to marvel at the tints in a clamp of bricks *in situ*, and thought what a vast gulf there is between such *brickwork* and the weary monotones of the architect's production. These things, say I, who should owe a grudge to the brickfield kind. Not so very long ago we were surveying in a working brickfield. On one side of our way was a quick-set, on the other a deep excavation half-full of clayey water; space available for walking, some 2ft. or less. Behold the ancient "Goth" one moment following the chain with measured tread, after the wont of the matter-of-fact surveyor—as though measuring the 360th part of the earth's circumference for important astronomical purposes—and the next waist-deep in a veritable Slough of Despond, and on a raw February afternoon! The survey stopped.

I owe no grudge. My objection to the brickfield is because it at times becomes decidedly offensive to the sense of smell. Other people's noses are no less sensitive, although, judging by the way in which some can live almost over a burning batch of bricks, one might be excused for thinking differently. But the bruised worm will turn. Wanting some more attractive topic, the editors of the *Times* and the *Standard*, if not those of other dailies, have opened their columns to the communications of parties suffering, either verily or in imagination, from the malodours of the brickfield. Letters from people residing in irreproachable suburbs, such as the various districts of Kensington, rave indignantly at the thought of the night-air that certain winds waft over the house-tops. "Sky-signs" have been let off mercifully compared with the brickfield. "Kensingtonian" awakens with "a sickening taste in the mouth, headache, and other unpleasant sensations," and miscellaneous correspondents have no less woe to relate. Now the complaints are doubtless warranted, but let the blame settle upon the right parties; for I believe it is a fact that stenches from a brickfield are chiefly referable to neglect and carelessness on the part of the operators therein rather than to the field, its earth, or the actual brick-making processes carried on. It is, I believe, the burning of refuse from the ashes, either carelessly left in them when used as fuel, or cremated as refuse, that causes abominable odours, a fact pointed out by Mr. James, L.C.C. for South Kensington, in the *Times*, which in due fairness to the operation of brick-burning should be more generally known. The burning decaying or inorganic refuse from dust-bins, when carried on at a low level, cannot be expected to be productive of odours so sweet as the "spicy breezes of Ceylon." Let this be stopped, as is proposed. Mr. James says that at Tuesday week's meeting of the County Council a by-law was made to this effect, and only needs the Local Government Board's assent to be put into operation. We shall then probably hear less of nuisances from brickfields, and people can turn their attention to those from sewer ventilators, which are really pestilential.

The "refuse destructor" comes in for its share of opprobrium with the brickfield. It is called "a new terror" by the *Standard* correspondents. The refuse destructor is not a new-fangled notion, though only recently has much attention been drawn to it. In theory, it is an admirable device, and in some places seems to have given great satisfaction. Thus, some days ago we learned that the Hastings authorities were delighted with the success of the one they erected. To it came bands of sanitary pilgrims from sixteen different places, eight of these delegates, we were told, having decided to adopt the plan of rubbish-cremating. The objections to its use in London are, apparently, (1) that it gives off obnoxious "asphyxiating" fumes, and (2) that in some cases the consignments of refuse continually being taken to the establishment are nauseating to near residents. A Haggerston correspondent's household "cannot open their windows without letting in a sickening, pervasive stench." A resident at Feltham views with pardonable dismay, day by day, "six or seven trucks of the offal of London fishmongers' and poulterers' shops, mixed with stable manure to disguise the other ingredients, standing alongside passenger platforms," while "the Railway Company propose making one grand depôt for the filth." Kensington, Earl's Court, and Notting-hill suffer nightly from "the burning of filthy refuse," and more careful followers of the correspondence will doubtless have seen many other dire complaints than these which I have casually observed.

The remedies are easy and simple, and must sooner or later be adopted. The furnaces of the destructors must be of a more scientific construction, so that the obnoxious gases are perfectly consumed, and the refuse must be taken to the depôts in specially constructed sealed vans, which are cause of offence neither to the eye nor nose. Properly arranged, a nuisance should be impossible, and thus a plan of getting rid of this "matter in the wrong place," excellent in theory, will be no less admirable in its practical working.

And why should not a municipal edict compel ordinary dust-carts to be of the construction suggested above—viz., covered in, and with well-fitting slides or lids? Here is a real nuisance rampant in the removal of dust and refuse in open vans on any day, particularly, however, when wind happens to be blowing, and more particularly when the van has been busy at some hotel or restaurant back door, wherefrom hath issued that appalling composition, the origin of the unspeakable foulness of which surpasses my understanding.

After all, I return to my pet "mutton," the sewer ventilator. There was a beauty near the entrance to the Military Exhibition, a sort of double-barrelled construction, its odour not belying its formidable appearance. And somewhere in the Strand at the end of Villiers-street, a few weeks back, was one nearly as objectionable. This, in an age of "sanitation."

The new Turner drawings at the National Gallery formed the subject of an interesting letter to the *Standard* of the 21st from Mr. Frederick Wedmore. It appears that something like a hundred drawings of the great master have suddenly appeared in the gallery, drawings that have never before been exhibited. Some are his earliest "paint-box" efforts, others in all the glory distinguishing the artist's latest styles. Mr. Wedmore says, of some of the earliest drawings, that they "display a very singular certainty in regard to architecture, and so suggest that Turner's treatment of building was not due merely to the fashion of the day, for topographical accuracy." These drawings should be full of interest to architects, especially any who hold views on Turner's architectural draughtsmanship similar to those expressed at times by myself in these columns. Turner's treatment of architecture in his youthful days is certainly not to be referred to outside influences, but to his own genius for delineating architecture. This was abundantly evidenced in the old water-colour drawings and in the unfinished pencil sketches so long in the basement at the National Gallery—a genius, however, which, as it also embraced landscape and other branches of drawing, may be said to have been certainly "a capacity for taking infinite pains." "Infinite pains" are indeed evidenced in the Turner water-colours more remarkable than in any artist's work of this nature, as may be seen by scanning the marvellous minuteness of the laborious colouring, the peculiar *technique* of which Mr. Ruskin has clearly demonstrated. To the architect this peculiar colouring is of less interest than the actual drawing in pencil of whole buildings and features. Anything showing the progress Turner made in the sketching of architecture will be of the highest interest, and it seems, from what our critic says, that something is to be learned in this way from the newly-exhibited works. Later than the primitive drawings above mentioned comes a representation of an old town gateway, which has "all the delicacy of an accomplished architectural work." Later still, though in Turner's youth, comes another drawing, a Norman crypt, in which the neutral and false—in a sense—tinting gives place to true colour, and this work was doubtless one of the steps to that beautiful representation of local colouring that culminated in the remarkable, though unfinished, castle gateway, well known to visitors to the old collection. Judging by what I read, Turner rapidly arrived at maturity, so to speak, as an architectural draughtsman—a distinct attribute of the true genius. But I shall hope to inspect these new works myself at the first opportunity, as, doubtless, will many other London architects.

Here's the difference between obscurity and fame. An unknown artist exaggerating colour would be condemned; his drawings would be "posters," and "highly coloured." Some of the drawings (actual sketches) in the new series, writes our critic, are "wrought in the sapphire blues, the topaz, and the garnet, in which Turner presented, in his advancing and most poetic years, not so much the daily facts about foreign heights and foreign cities as their aspect in his own enchanted dream."

GOTH.

CHIPS.

The Thomasson Park at Bolton, presented by Mr. J. P. Thomasson, ex-M.P. for the borough, at a cost of £20,000, will be opened to-day (Friday). Within the grounds of this new park there is a first-class library and museum, and one of the finest bathing ponds in the country. There are also lawn tennis grounds, bowling green, and gymnasium, as well as other adjuncts for a well-appointed park. £10,000 has been spent by the corporation in laying-out the grounds and adapting a mansion for a museum.

The fire which occurred in the Cathedral of Siena last week was happily restricted, by the brigade from Florence, to the cupola, the famous façade, by Giovanni Pisano, being preserved; but the damage done has been great. The vaulted interior of the cupola did not fall in; but the conflagration has destroyed the outside vaulting, its roofing of zinc and lead, and the gallery running round the cupola. The zinc and lead covering of the nave has also been destroyed, but the roof itself remains intact. The fire was caused, as usual, by carelessness on the part of the men engaged in repairing the roof of the dome. The following illustrations of this Duomo have appeared in our pages: West façade, Sept. 6, 1889; choir stalls, Jan. 1, 1886; ciborium and font, Feb. 5, 1886; bishop's seat, Sept. 17, 1886.

St. Luke's Church, Claremont, Newcastle-on-Tyne, was consecrated on Saturday. The style is Early English. The last window has been filled with stained glass representing the Crucifixion, carried out by Mr. Baguley, of Newcastle.

The annual dinner of the Carpenters' Company was held in the Company's hall at London-wall on Tuesday evening, Professor Banister Fletcher in the chair, when about 70 gentlemen were present. The toast of "The Examiners and Teachers of Technical Institutions," proposed by Mr. A. Preston, was responded to by Sir John Coode, president of the Institute of Civil Engineers, and Mr. T. F. Rider, president of the Builders' Institute.

The sixteenth session of the Manchester Architectural Association was opened on Tuesday evening by a conversazione, held in the Attendance Lecture Hall in that city, where a reception was held by the President, Mr. Thomas Chadwick, A.R.I.B.A., and the prizes were distributed. An exhibition of architectural and other drawings, photographs, and books, and of specimens of work, were on view.

New police-station and sessional courts have been erected at Stonehouse, and special attention has been paid to the ventilation, the extraction of the vitiated air being effected by the latest improved form of Messrs. Bobert Boyle and Son's patent self-acting air-pump ventilator, and fresh air admitted by their improved air inlets.

CONTEMPORARY BRITISH SCULPTORS.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

TO diversify our portrait series, we publish to-day our third sheet of sculptors, which forms the thirty-fourth double-page plate of photographs given in the BUILDING NEWS since the commencement of the present year. The first portrait in our present group is that of Mr. T. Brock, A.R.A., the sculptor of the bronze statue of Sir Bartle Frere, Bart., on the Thames Embankment, and "A Moment of Peril," the equestrian group now at South Kensington, which was purchased by the President and Council of the Royal Academy under the Chantrey Bequest in 1881. Among his other works we may name the following busts:—the late J. H. Foley, R.A.; the late W. S. Cookson; Jerome Murch, ex-mayor of Bath, 1879; the late Major-Gen. Boileau, R.E., F.R.S., for Kensington new Town Hall; Merthyr Guest; the Marchioness of Westminster; Sir Frederic Leighton, P.R.A., in bronze; and Henry Harben. Among his statues and groups we remember Richard Baxter, at Kidderminster; the Rathbone Memorial in Sefton Park, Liverpool; "The Snake Charmer"; equestrian statue of Viscount Gough, G.C.B., in 1878; "Our Boy" in marble; the statue of Robert Raikes, erected on the Thames Embankment; "Yonder He Goes," a bronze equestrian group exhibited in 1887; "The Genius of Poetry," last year; and Lord Angus, first colonel of the Cameronians, erected this summer in commemoration of the raising of the regiment. Mr. Brock has executed a great many medallions, such as that of Mrs. Boutcher, the late Peter Squire, and others. His statue of Sir Richard Temple, Bart., for the Town Hall, Bombay, is one of his chief works. He has also done numerous portraits, as, for instance, H. Rys, Chairman of the Merthyr Tydvil Board of Guardians; Rev. Samuel Harris Booth, President of the Baptist Union of Great Britain; the bust of Longfellow in Westminster Abbey; Capt. Hanham; the late Sir Erasmus Wilson in marble, for the Royal College of Surgeons, and another of this physician for the Infirmary at Margate; Mr. and Mrs. W. T. Lewis; the late Mr. Manelaus, of Cardiff, for his gallery in the Free Library there; Prof. John Marshall, F.R.S.; Sir Jervois Clarke Jervois, Bart.; and Isaac Pitman. Mr. Brock's photograph is from the studios of Messrs. Maull and Fox, of Piccadilly.

Mr. Albert Bruce Joy has always been a hard worker. In 1872 he exhibited a bust of Dr. Bruce Joy and some medallions of Miss E. Farrar; Rev. E. W. Farrar, now Archdeacon of Westminster; Joaquin Miller; and Miss Scott Siddons. Other portraits followed of Rev. Clayton Greene; Rev. Dr. Lloyd, Provost of Trinity College, Dublin; Miss Barton; and H. I. M. Napoleon III. At this time Mr. Joy's "Roman Boy" attracted attention. Sir Humphrey Davy was commissioned for the Royal Society, and Professor Max Müller was produced the same year. R. W. Raper, a medallion, and "The First Flight," executed in bronze, were shown at the Academy in 1876. The late Dr. Sellwyn was sculptured by Mr. Joy for the New Divinity Schools, Cambridge; the late John Laird, M.P., a bronze statue for Birkenhead, and the late Dr. Graves, for the Royal College of Physicians, Dublin; Canon Hamilton; the late Professor Malden, for University College; Mark Firth, for the University at Sheffield; John Stone, of Bath; Pratt's Medallion in Harrow School Chapel, and the statue of Chief Justice Whiteside in St. Patrick's Cathedral, Dublin. Other portraits included the President of the Royal Society, W. Spottiswoode; H.R.H. Prince Leopold; Hermann Vezin; Dr. Longstaff, for the Chemical Society; Dr. Harvey, for the Memorial on the Lees, Folkestone; and Viscountess Monck, in silver. "The Pets" was the title of a marble group. Mrs. Hickman furnished a medallion, and so did Miss Elspeth Campbell; H.S.H. Prince Herman de Salms-Braunfels, in bronze; the late Provost of Oriel College, Oxford; the late Lord Frederick Cavendish (statue); the Right Hon. W. E. Gladstone, M.P.; Mary Anderson; Rev. FitzHugh; Christopher Bushell, a statue for Liverpool; the Provost of Trinity College, Dublin; the Archbishop of Canterbury in 1885, Frank Griffin, F. H. Gillig, of New York; Percy Fitzgerald, the late Sir William Siemens, F.R.S.; the Marquis of Salisbury, K.G.; Earl Cairns, Prof. Stokes, M.P., P.R.S.; General Sir Frederick Roberts, Commander-in-Chief of India; and the late Lord Farnborough, which was exhibited in this year's Royal Academy. Mr. Bruce Joy's photograph was taken lately by Messrs. Done and Ball, of Baker-street.

Mr. Wm. Calder Marshall, R.A., was a pupil of Chantrey and Bailey. He was born in 1813. He first exhibited at the Royal Academy in 1835. He was elected A.R.A. in 1844, and R.A. in 1852. His taste has caused him to devote himself to poetic sculpture, and from the Art Union of London he has received many commissions. "The Broken Pitcher" and "Rebecca" were done in this way. "The First Whisper of Love" was chosen by the Art Union prizeholder of £300, and his "Dancing Girl Reposing," obtained the Art Union premiums of £500. "Sabrina" was well-known, having been produced in porcelain by Copeland. Mr. Marshall was one of the three sculptors employed in the Houses of Parliament, for which he executed the statues of Lord Clarendon and Lord Somers. He designed the statue of Sir Robert Peel at Manchester, and those of Jenner and Campbell. The first of these was in Trafalgar-square, but has been removed to Kensington-gardens. Mr. Marshall obtained the prize of £700 in 1857 for a national monument to the Duke of Wellington, and he executed part of a series of bassi-rilievi for the chapel in St. Paul's Cathedral. The statue of Crompton, the inventor of the spinning-wheel, was erected by Mr. Marshall at Bolton, Sir Geo. Gray at Cape Town, and Earl Derby. "Briseïs" was a group, and "Ruth" was a statue shown Mr. Marshall in 1872. "Wilder'd Fancies," "Tali Players," "The Prodigal Son," "Early Troubles," "Stepping Stones" (bronze), "Miranda," "Hermia and Helena," "Noonday Idleness," "The Last Days of Pompeii," "Sabrina thrown into the Severn" (a bronze group), "Achilles in the Styx," "Psyche," "Eve," "Debora," "Cordelia," "The Foolish Virgin," "The Old, Old Story," "Lilith leaving the Garden of Eden," "A Mermaid" (at this year's Academy), and "Noon," are among this sculptor's works. His portrait was taken by Messrs. Done and Ball, of Baker-street, W.

Mr. H. R. Pinker, formerly of Brighton, was engaged for some years in works of an architectural character, as at the Brighton Aquarium, where he carved the various caps and representations of fish, birds, and sea life. The figures in front of the "Palgrave," facing the Law Courts, are from his hand. His monumental works include the John Hunter Statue at Oxford University Library and the W.E. Forster Memorial, recently executed for the Thames Embankment in Temple-gardens. The monument to the late Prof. Fawcett at Salisbury was Mr. Pinker's work, and also the Britannia Statue for a Colonial work. His busts have been numerous, including the Rev. Chas. Calverley, the Prebendary of Wells, the Archbishop of Canterbury when Bishop of Truro, the Rev. E. C. Wickham, head master of Wellington College; the late H. S. I. Macnamara, Viscount Gage, Sir Wm. Yardley, the late Lord Chief Justice of Bombay, the late Earl of Ashburnham, the late Duke of Portland, Rev. Dr. Diamond, Prof. Rolleston, for Oxford University Museum; Sir Henry Acland, Bart., K.C.B, Professor Burdon Sanderson, Very Rev. Montague Brown, Dean of Lismore; the Dean of Christchurch, and W. S. Savory, F.R.S., President of the Royal College of Surgeons, exhibited this year at the Academy with the bust of Mr. F. W. Waller, M.A., Principal of St. Paul's School. The photograph given here is by Messrs. Elliott and Fry.

Mr. F. J. Williamson, of Esher, has executed a very varied and large number of works. His "Hypatia,"* in marble, at this year's Royal Academy, is one of his best productions. The following are some others of his essays:—"Baby Norman Lovegrove"; John and Archibald and Sir William Stirling Maxwell, Bart.; "Spring and Autumn"; Maria Hill; Dr. Priestley, of Birmingham; Count Münster; the Earl of Rosslyn; the memorial to the late Princess Charlotte, Claremont Palace; "Modesty," a group in marble, and "Miranda"; portraits of Prince Albert Victor of Wales, Prince George, Lord Loughborough and Hon. Fitzroy St. Clair Erskine; the Duke and Duchess of Albany; "Ferreting," a portrait group; Right Hon. and Mrs. Geo. Cubitt; the Princess Alice of Albany; Princess Beatrice; Lord Esher; Duke and Duchess of Connaught; Sister Dora, for Walsall; the Queen, Mrs. Kersey, the Rector of Bishopgate; and Robert Godlenton, of the Legislative Council of Capetown. The photograph of Mr. Williamson is by Messrs. Brown and Draycott, of Walsall.

Mr. John Rhind, one of the leading Scottish sculptors, born in Banff in 1828, was a pupil of the late Handyside Ritchie, A.R.S.A. Principal among the many public memorials which he has erected, may be mentioned that in memory of the Duke of Athole, at Dunkeld; Duchess of Sutherland, at Golspie; Earl of Dalhousie, at Brechin; Marquis of Tweedale, at Haddington; Sir John Forbes, at Lawrence Kirk; Memorial Fountain at Banff; the Dick Statue at Veterinary College, Edinburgh; and recumbent figures of the Earl of Kellie, at Alloa; and Countess of Wemyss, at Aberlady; the great Marquis of Montrose, in St. Giles's Cathedral, Edinburgh; and he has just completed a full-size model for colossal statue of the late Dr. Chambers for Edinburgh, the three last having been illustrated in our pages. He has executed the sculpture and decorative work on the following public buildings:—Corn Exchange, Leith; Fettes College, Bank of Scotland, Union Bank of Scotland, County Buildings, University Club, Stock Exchange, Museum of Science and Art, restoration of St. Giles's Cathedral, the Castle, all in Edinburgh; a large portion of the sculpture, and also a number of the statues on the Municipal Buildings, Greenock; Municipal Buildings, Glasgow; Gosford House, Loch Inch Castle, Dumfriesshire; Meikleour House, Forfarshire; Scott Monument, Edinburgh; Arniston House, Gorebridge; Army and Navy Hotel, London; Scottish Widows' Fund, Belfast; Free Libraries of Hawick and Dunfermline, Luiburn House, Midcalder. He has just recently completed the bulk of the sculpture work for the Edinburgh Electrical Exhibition Buildings, and among other works is at present engaged on a series of bas-relief figure panels for the interior decoration of the County Hall, Paisley. He has executed also many ideal works as well as a great many ideal portrait busts, many of which are placed in the public buildings in Edinburgh. The portrait was produced by Messrs. Rae and Sons, Banff.

* Illustrated in the BUILDING NEWS, June 20th.

SANITARY SPECIALITIES.

WE have received a new illustrated catalogue of the sanitary specialities of Messrs. Thos. Crapper and Co., of the Marlboro' Works, Marlborough-row, Chelsea. Among the valuable improvements in sanitary appliances we observe Messrs. Crapper and Co.'s "Improved Kenon" disconnecting trap, carrying out the suggestion by Professor Corfield, M.A., M.D. The chief objection against the ordinary disconnecting trap is that it is not easily accessible if placed in deep inspection chambers. The "Kenon" is supplied with a valve which can be opened from above to avoid the stoppage caused by sewage accumulation. By removing the manhole cover and raising the pull attached to the valve, the sewage can find free access into the sewer. By this arrangement the trap can be readily cleansed. These improved traps have an egg-shaped invert by which the passing of the sewage is quickened at the open end or channel. The traps are made of glazed stoneware, or can be glazed white inside, and cost for a 4in. size 9s., and for a 6in. 12s. 6d. If fitted with gunmetal valve, galvanised iron chain pull and bracket, and brass screw-cap, the cost is 31s. for a 4in., and 34s. 6d. for a 6in. drain. The shape of the trap, as improved, affords a quicker and more cleansing current. The "improved sanitary air-tight frames and covers" for drains and manholes are excellent, as the joint, which forms a kind of tongue and groove, is quite gas tight, and the covers can be ornamented by tiles to suit the paving. We also notice several other forms for channel pipes. The improved fresh-air mica inlet valves, the automatic flush-tanks, improved grease traps, the cast-iron lead traps for valve-closets, show several good points, such as the egg shaped conduit, and the same form is adapted to the gully-trap of glazed stoneware and grease traps. These have galvanised iron gratings or grids. Improved forms of valve-closets, like the "Elastic," where the overflow is kept clear; the "Ovington Wash-Down" with trap; water-waste preventers, baths, and lavatory fittings are illustrated.

COMPETITIONS.

St. Mary's, Islington, Public Baths and Wash-houses.—The following is an abstract of Professor Roger Smith's report in this competition. On Tuesday last the Commissioners confirmed their previous award, and appointed Mr. A. Hessell Tiltman, F.R.I.B.A., architect for the work. The second premium has been given to Mr. J. D. Mathews, F.R.I.B.A.; and the third prize to Mr. Robert J. Lovell, A.R.I.B.A. There were twelve sets of designs submitted in the competition for the proposed buildings in Caledonian-road, but there has been no exhibition of the designs. The three chosen plans will be on public view at the vestry hall, Upper-street, Islington, on and after Friday, November 7th next. Professor Smith says: "Making a selection from among these designs has been a more troublesome matter than usual, chiefly because the programme has not been a rigidly binding one; but each architect was left at liberty to vary and adapt his plans and design to what he may consider more suitable accommodation. It, of course, is extremely desirable in a set of public baths and wash houses that all the public accommodation should be on the ground floor; but the site is not large enough to permit this on the scale indicated in the instructions. In "Comme il Faut," the design placed first, the baths and public wash-houses and laundry are well separated—the swimming-baths being side by side on the southern half of the land, and the wash-house on the northern. The greater part of the warm baths are in two groups adjoining the two swimming-baths, and the women's warm baths are on the first-floor. The towel laundry is in the basement. This disposition gives as nearly as possible all the public accommodation on one floor; but in order to accomplish this, the architect has reduced the size of the swimming-bath. He has, however, kept it of good proportion. The first-class bath is 90ft. by 40ft.; the second-class one is 72ft. by 37ft. All the baths are well lighted and ventilated, and the general arrangement is, with one exception, very satisfactory. The defect in the design is that it contains three pay-boxes, which, it will be easily understood, increases the expense of working the establishment, though, as it does not appear to me difficult to do away with one of them, there is perhaps not quite so formidable an objection as it sounds. On the other hand, a good many details have been very carefully worked out, details which many of the other architects have omitted or not done so well. An example of this is the arrangement for providing a disinfecting chamber and small yard adjoining the public laundry and wash-house. The architectural treatment of the design, though not cheering, would be satisfactory, and probably more so than the rather heavily-coloured elevations indicate. A very carefully written and full report on the engineering questions accompanies the design, and shows a familiar acquaintance with bath work. Some provision for circulating the water in the swimming-bath is suggested in this report. The design is economical, and can, in my opinion, be carried out within the estimate." "Cleanliness" is the design awarded the second place. Mr. Smith says: "The author of this design has placed one swimming-bath (measuring 90ft. by 41ft.) to the north, and one measuring 85ft. by 42ft. at the south of the block. The towel laundry is behind the south bath. The central portion of the block contains the warm baths in the rear, all massed together in two groups, and well arranged, and the waiting-rooms and lobbies are in front. The public wash-house is on the first floor, boiler-house, &c., in basement. The simplicity and clearness with which the ground-plan is worked out deserves the highest praise, and taken alone, that plan is, in my judgment, superior to any other exhibited. The public wash-house and laundry, however, unfortunately covers a considerable part of the second-class swimming-bath, and seriously interferes with its success; nor is an upper floor as such quite free from objection for such a department. The required information is not full. The architectural treatment also is not vigorous or striking. The design, however, in addition to having the merit of being very simply arranged, and consequently easily supervised and worked, of giving swimming-baths almost of the exact sizes asked for, is undoubtedly very economical, and, could, I make no question, be built for the sum of £15,000 named in the instructions." "Soap and Water," the third premiated design, is thus described: "In this design the two baths are placed together, as they are in that of 'Practical.' One bath is 40ft. by 90ft., the other 40ft. by 72ft, with a recess intended for a boys' bath, bringing up the length to 90ft. The desired water dimensions are thus very nearly secured; but the platform is not carried all round the latter, and the dressing-boxes are in two stories. The public wash-house and laundry, extremely well arranged, occupies the north end of the block. The warm baths for men are on the ground floor; for women on an upper floor. There are two pay-offices. The superintendence and working of the building would be easy. The architectural treatment is on the whole satisfactory, though the exteriors are better than the interiors. The engineering details are thoroughly gone into. The basement, better lighted than many designs, is unnecessarily large, and the design in other respects not so economical as some; but many points of detail have been carefully considered, and the plan represents a group of buildings that would answer the purpose well." The report deals with all the designs in a similarly detailed manner. We have had serious complaints from the competitors because no one has been allowed to see any of the designs—not even the competitors.

CHIPS.

A new Congregational chapel at Heckmondwike, in the Spen Valley, was opened last week. It is Classic in style, and seats 1,000 persons on ground floor and gallery. The architect was Mr. Arthur A. Stott, of Heckmondwike, and the cost has been £10,000.

A Methodist New Connexion church and schools, to be dedicated to St. Paul, are being built in Melbourne-road, Leicester, from plans by Mr. A. H. Goodall, of Nottingham. Messrs. J. Mason and Sons, of Leicester, have taken the contract at £3,750.

At a meeting of the executive committee of the Royal Naval Exhibition held on Saturday, Mr. Wilson Bennison, architect and surveyor to the Royal Agricultural Society, was appointed architect.

The University galleries at Oxford, which have been for some time undergoing the processes of enlargement and rearrangement, were on Friday reopened. The structure has been enlarged by the addition of several well-lighted rooms, to which the collections of classical antiquity, notably the Arundel marbles, have been removed. To these have been added a collection of casts of the most important remains of Greek art, including the most modern discoveries. These have been systematically arranged, commencing with the archaic period, and form an educational series of a very complete character. At the same time, the Turner drawings have been made more accessible, and arranged upon screens, as also the Raphael drawings, which have gone through a process of careful cleaning and remounting. The Dome collection of engravings—a brilliant series of Rembrandts, Vandykes, and Albert Durers—has also been transferred by the Curators of the Bodleian to the Galleries.

On Thursday afternoon, the 16th inst., the Bishop of Lichfield reconsecrated the new chancel which has recently been added to the parish church of Wednesbury. The chancel is spacious, and is built of Codsall stone, and contains three stained-glass windows. The centre one represents the Descent of the Holy Ghost at Pentecost. The builders were Messrs. Dorse and Son, Cradley Heath; the architect Mr. Basil Champneys, of London; and Mr. Arthur Kemp has acted as clerk of the works. The total cost has been £1,954. The nave has been recoloured by Messrs. Beardmore and Lowe, and the woodwork of the choir stalls has been executed by Mr. R. Bridgman, of Lichfield.

A new mission church and Sunday-school, which have been erected in William-street North, in connection with St. George's Church, Birmingham, was opened on Friday. Messrs. Dunn and Hipkiss were intrusted with the designs, and Mr. Webb obtained the contract. The building comprises a large mission hall and two class-rooms.

The staff of Mr. Andrew Potter, of Melbourne Works and Church-lane, Wolverhampton, numbering between four and five hundred, were last week conveyed in brakes to Bridgenorth, arriving there early in the forenoon, when, after visiting the principal places of interest in the neighbourhood, they returned to the Bandon Arms Hotel, where an excellent dinner was provided.

The new National Provincial Bank of England, Bristol, is warmed and ventilated throughout by means of Shorland's patent Manchester stoves, some with ascending and some with descending smoke flues, all supplied by Mr. E. H. Shorland, of Manchester.

Building Intelligence.

Leeds. — The new branch bank for the Birmingham and Midland Bank will be situate in Kirkgate on the south side, and immediately opposite to the market. The façade will be Classical in design, with a frontage of 41ft., and an imposing elevation 55ft. high, which will be executed in stone. The interior walls are to be lined with Italian marble, the floor will be paved with mosaic work, the ceiling will be panelled, and the whole of the counters, desks, and fittings will be of solid walnut. The design has been prepared by Mr. William Bakewell, architect, of Leeds, and will be carried out under his superintendence. The work has been let to Messrs. Nicholson and Son, Heavyside, Barraud, Moore, and Bateman.

Loughborough.—The opening of the Loughborough Town Hall, recently purchased by the Town Council, was celebrated on the 15th inst. (after undergoing extensive alterations) by his Worship the Mayor, Alderman Griggs, J.P., who invited upwards of 500 guests to a reception and ball. The alterations and decorations, at the cost of about £2,300, have been carried out by Mr. George H. Barrowcliff, architect, of Loughborough. On the 24th ult., in the afternoon, the burgesses, to show their high appreciation of the valuable services rendered to the town by the mayor since its incorporation two years ago, presented him with an address and a portrait of himself painted by Mr. Alfred Hartley, of Chelsea.

Northington.—The new church of St. John the Evangelist, situated on the slope of Northington Down, was consecrated by the Bishop of Guildford on Wednesday week. The church, which is Late Gothic freely treated in detail, was designed by Mr. T. G. Jackson, M.A., and consists of nave, chancel, tower, and north aisle. It has been erected principally by the estate workmen, and under the superintendence of Mr. Thomas Potter, M.S.A., Lord Ashburton's clerk of works. The walls are of Portland cement concrete, those of the tower being 4ft. in thickness, faced externally with flintwork and Chilmark stone dressings, and Caen stone internally. The flintwork is inlaid in panels of various designs. Each of the twelve lights contains the figure of an Apostle, one of them being a portrait of the late Lord Digby. The seating throughout is of black American walnut; the nave seats have traceried ends and carved panels, no two of which are alike. The chancel stalls have high backs and canopies and carved standard ends. The organ case is of the same material, rich in tracery and carving, and overhangs the stalls on the north side. The pulpit is of Caen stone. The reredos is of alabaster, with a panel representing the Last Supper. The chancel is paved with marble mosaic. The tower is of Chilmark stone with flint panel inlays. It consisis of two stages, the upper of which is lighted on each face with two louvre windows, 24ft. in height, a traceried parapet surmounting the whole. From each angle springs a pinnacle with crocketed spirelets, that at the south-east angle being larger than the rest. The woodwork generally, including the nave seats, chancel stalls, and organ case, was made in the estate workshops by the estate workmen. Messrs. Farmer and Brindley executed the carving and pavement of the chancel, the reredos, and font. Messrs. Hart, Son, Peard, and Co. made the lectern and altar rails. The total cost has amounted to nearly £15,000; the seating accommodation, including choir, is for 260 persons. We illustrated the exterior of the church in our issue of Feb. 1, 1889, and the interior on Jan. 10, 1890.

Southport. — Primitive Methodist Sunday Schools, Southport, have just been commenced in Derby-road. They are designed on a large scale, accommodation being provided for the carrying on of every department of Sunday-school work. The large assembly hall is in the centre of the building, with a balcony round three sides of the same (carried on iron brackets without columns), and surrounded, both on the ground and balcony floors, with lecture room, infants'-room, 16 class-rooms of various sizes, library, choir-room, and minister's vestry. The assembly-hall is 37ft. wide and 48ft. 6in. long on the ground floor, and 62ft. long on the balcony floor, in addition to a large rostrum and choir recess. The hall is half open-timbered in the roof, being ceiled at level of collar-beam, and,

in addition to the front windows, is lighted by means of vertical lantern windows on both sides of the roof, and ascending the whole length of the hall. There are two main entrances fronting Derby-road, in which are the principal staircases to the balcony, also side entrances and separate outside doors to the choir and minister's vestry. The floors of these vestries are on the level of the rostrum and orchestra. Side staircases are also provided from the rostrum to the balcony. The large hall will seat 500 adults, and in the class and lecture rooms there is accommodation for between 400 and 500. The whole of the internal woodwork will be varnished pitch pine. The building has a frontage of 80ft.; it will be built of bricks, being faced with Accrington plastic bricks, interspersed with Yorkshire stone dressings. The total cost will be £3,000. The work is being executed by local tradesmen, under the superintendence of Mr. F. W. Dixon, Oldham, whose design was selected in competition.

Weston-super-Mare.—The foundation-stone of St. Saviour's Mission Church, in Locking-road, was laid on Tuesday week. The church is to be built in the Early English style, and cruciform on plan. The accommodation will consist of nave, 27ft. wide in clear of walls, aisles 10ft. wide, and transepts 23ft. wide. The chancel, which will terminate at the east with a semi-decagonal apse, will be 22ft. wide. There will be an organ-chamber on the south side of the chancel, and vestry under tower. The external walls will be built with local blue limestone, with Bath and Box stone dressings. The interior, except the chancel, which will be faced with Corsham stone, will be lined with buff bricks with stone dressings, and red rubbers for bands, and voussoirs of arches. The shafts of the columns of the chancel windows and chancel arch will be executed in Devonshire marble. The arcade columns to the nave will be of red Mansfield stone. The contract is being carried out by Mr. James Wilcox, of Weston-super-Mare, and the architect is Mr. S. J. Wilde, of the same town, whose design was selected in open competition. The first portion to be placed in hand is the chancel and organ-chamber, adding from the chancel arch westward an iron building by way of a temporary nave, so that the first structure will seat about 275 persons. The first section, which is now building, will cost about £2,000. The estimated cost of the entire building is £6,000.

Engineering Notes.

Proposed Tunnel between Ireland and Scotland.—A public meeting, convened by the Mayor of Belfast, to consider a scheme for constructing a tunnel between Ireland and Scotland, was held in that city on Friday. Mr. Barton, civil engineer, submitted his scheme, which is to construct a tunnel from the junction of the Belfast and Northern Counties Railway, four miles inland from Whitehaven, on the Antrim coast, to the centre of Wierston Hill, in Wigtonshire, also about four miles inland, the whole length to be about 34 miles. The tunnel, which would take a north-easterly course after leaving the Irish coast, in order to avoid a pool 600ft. deep off the Wigton coast, would have a gradient of 1 in 75, four miles on each side, and a gradient of 1 in 1,000 for the remaining 26 miles, with pumping and ventilating stations on the extreme coast-line on each side. The scheme had the support of Sir Douglas Fox, engineer of the Severn Tunnel; Sir Benjamin Baker, the Forth Bridge engineer; and Sir John Hawkshaw, of London. He estimated the total cost at £8,000,000, and the tunnel could be completed in ten or twelve years The meeting passed resolutions recognising the importance of the scheme, urging the Government to render financial assistance, and appointing a committee to consider and report upon the whole question.

The opening lecture of a course to registered plumbers was delivered in the Upper Queen-street Hall, Edinburgh, on Monday night by Professor Crum Brown, the subject being "The Chemistry of Alloys." Sir Alexander Christison, who presided, said that since February thirty-two plumbers from Edinburgh and district had been "registered." Professor Crum Brown devoted his remarks to a description and consideration of the composition and the properties of the alloys of solder and of brass.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLI., XLIX., L., LI., LIII., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

Received.—J. C. E.—J. P.—P. and Son.—B. of S.—M. and N.—J. H. W.

Correspondence.

THE COMPETITION FOR WHITEFIELD'S TABERNACLE.

To the Editor of the Building News.

Sir,—A good deal has been written in the professional journals with reference to my award of the premiums in this competition, to the general effect that the first premium ought to have been given to "Lux Mundi," and that no premium ought to have been given to "Winged Heart."

I sincerely admired the artistic and practical merits of Mr. Brydon's design—"Lux Mundi," but its cost and its acoustic qualities stood in its way. Of every design which on other grounds it seemed might possibly deserve a premium a careful approximate estimate was made; and though I could recognise that Mr. Brydon had striven to keep down cost, I could not see my way to report that his design could be carried out within—or even near—the limit of cost fixed.

Further, I did not consider that a dome of the size and height proposed was a suitable or safe ceiling for a large public place where clear hearing and easy speaking were of the first importance.

The objection to "Winged Heart" has been raised that it occupies a longer frontage to Tottenham Court-road than is figured on the lithographed plan issued to competitors, and when I discovered this fact I had to consider the position of this design carefully and another similarly drawn. The lithographed plan on the face of it proclaims itself incorrect, as the dimensions figured on the east frontage and those figured on the west frontage differ by 6ft., though there is no indication of any oblique boundary north or south. These two competitors appeared to be the only two who had cleared up this difficulty, and it did not seem reasonable or required by any principle of equity to exclude them for fitting their building to the site it was intended to occupy. Further, looking at the nature of the considerations which the decision would have to turn upon, it did not appear to me that either of them gained any advantage over the other competitors by reason of the difference in dimension of the east frontage, and there was nothing to suggest any suspicion of bad faith. I do not think that any one of my critics, under the circumstances, would have felt it right to act differently.—I am, &c., T. Roger Smith.

Sir,—I sincerely hope, with Mr. Woodward, that this matter may be taken up by the Institute. But the Institute wheels move slowly, and it would be desirable to have an authoritative opinion at an early date. Some of us are, even now, engaged in preparing plans for competitions, which bear considerable analogy to the "Whitefield" case, and this precedent places us "between Scylla and Charybdis." If we keep strictly to the conditions, our designs stand a chance of being passed over by Mr. Roger Smith or some like-minded assessor, for some more ambitious design. On the other hand, if we give to our designs (to quote Mr. Roger Smith) "such an amount of elegance, dignity, and convenience as will be appropriate to the present day," disregarding the stipulation as to cost, we may be ruled out of court, as having transgressed the conditions. I would, therefore, appeal to Mr. Waterhouse, as the President of the Institute and the member of the profession who has had most experience as an assessor, to give us, through your pages, the benefit of his opinion on the matter.—I am, &c.,

One in a Fog.

A COMPETITION FARCE AT BRISTOL.

Sir,—The memorial stones of a Wesleyan chapel at Westbury Park, Bristol, were laid last Tuesday.

Early in the present year, several architects were invited to submit designs in a limited competition for the proposed buildings, and in the instructions issued by the committee, the cost was placed at £1,800. They also set forth that two vestries were required, and that "a spire would be considered an improvement."

A London architect, who declined the invitation to compete, was subsequently appointed by the committee as assessor. The designs having been sent in, one was accepted as advised by the assessor, it being afterwards determined to modify the accepted drawings in order to reduce cost, also to omit the spire, together with one of the vestries provided for in the original instructions, for the same purpose.

Upon the receipt of tenders for the building according to the modified designs and omitting the spire and vestry, they were found to range from £3,334 to £2,748, the latter being accepted.

It was after this farce of architectural competition, limited to a cost of £1,800, without modification or omission, that the memorial stones were laid as before stated.

I inclose the original instructions, a newspaper report of the stone-laying, and names of assessor and successful competitor.—I am, &c.,

Not in It.

"CONGREGATIONAL BUILDING."

Sir,—Your leading article of last week recalled to notice a little volume of suggestions relating to this subject which I published a good many years ago. Since then, various experiments have been tried, and it is perhaps easier now than formerly to arrive at definite conclusions.

Speaking, for the moment, only of the largest schemes of this kind, one fact stands out clearly: We must deal with them as we can, not as we would. As a rule, they have to be cheap, and very cheap. Such constructions as that at Union Chapel, Islington (which you refer to), is quite out of the question for most of them. Yet, for a substantial building of its kind, with seats for 1,600 people, with a large public hall, large schools, infant-schools, numerous classrooms, vestries, and offices, and a caretaker's house, it was by no means costly. A ridiculous statement has gone forth to the world that the building alone cost £50,000. The facts are these: The original contract was about £22,000. While the building was in progress, supplementary contracts and arrangements were entered into by the committee, from time to time, for stone

dressings instead of brick; for pressed bricks instead of stocks; for a marble and onyx pulpit, marble and onyx gallery-parapets, marble pavements, marble organ-screen, wrought-iron grilles, grisaille glass, &c.; and these, with about eight hundred pounds' worth of ordinary builders' extras, brought the cost to nearly £28,000. Since then, the tower has been added; but the whole amount expended from first to last on the building (apart from site, &c.) has been very much nearer £30,000 than £50,000. So much for the accuracy of the reports which "fill all morning and evening newspapers."

Most buildings of the congregational class, however, need to be a far cheaper kind than this. Even stone columns, I think, will generally be out of the question, with all the expensive construction which stone columns lead to. But need we, therefore, fall back on our very old acquaintance, or rather, perhaps, our "ancient enemy," the cast-iron post? Surely not. Artists and utilitarians alike condemn it: and on grounds of public safety, it should be prohibited, unless protected by concrete or some similar coating, in all public buildings. Structural ironwork is already obliged by law to be so inclosed in concert-halls and music-halls, and why it should not be protected in churches and chapels also it is hard to see. Even wood, in pieces of any considerable size, is known to be far more fireproof than unprotected iron, and no place of public assembly should be liable to come down with a run, as these unprotected-iron-column structures do, a few minutes after an outbreak of fire. Before long we may hope that the lives of religious people will, in the eyes of the law, be held as valuable as the lives of musical ones, and that ironwork carrying walls and roof will everywhere alike have to be imbedded in concrete. But without waiting for this, the legislation which will end the iron-post or spindle-shanked age of architecture, we can each adopt the improvement for ourselves. A new way of building is before us, strong, cheap, and capable of being made beautiful: the way of building with rolled iron or steel, and concrete;—well-known and tried elsewhere, it has yet been little heard of in buildings for religious purposes. But it is full of possibilities, and if it were frankly and fairly adopted, it might help us, in this class of structures, out of half our difficulties.

Iron colums concreted round—and possibly with an outer casing of some finer substance—in addition, cannot be very small. For reasons of convenience, therefore, they must be spaced out with some thought and skill, and not merely dotted down in two rows from end to end of a building. It may, perhaps, be expected from this, that what have been termed "central area plans," that is, plans in which the central space is shaped as a polygon or a circle, will often be found very convenient for congregational buildings. They afford, or can easily be made to afford, an unobstructed view of the speaker; but there is a vital point here which is very commonly overlooked. It does not follow in the smallest degree that because a building is good for seeing in, that it will also be good for hearing in. The two things depend on quite different conditions, and there are churches in London in which one might be near enough to the minister to be able to throw a stool at him, like Jenny Geddes, and yet be quite unable to catch one word in a dozen of what he is saying.

Echo, reverberation, and loss of sound are the great dangers to which central-area buildings (as distinguished from very long and narrow ones) are most liable. Once keep clear of these, and the building will be acoustically good. Echo and reverberation come mainly from unbroken or only slightly broken surfaces, both in walls and ceilings. The more the ground-plan of a building is broken up—provided it is free from deep transepts or recesses—the less echo there will be from the walls. The four corners of a square or oblong plan, too, are favourite harbouring-places for echoes, more or less distinct; and in buildings remarkable for their acoustic merits (like the former Surrey Music Hall designed by Sir Horace Jones), we often find them cut off obliquely. But echo depends still more on the ceilings than on the walls; and here one cannot, I think, be too determined in breaking up and getting rid of all smooth surfaces. Architecturally, there is nothing more tempting to a designer than a dome as the finish of his central area; but such a feature, unless on a very small scale and greatly broken up by ribs and hollows, will be likely to finish the preacher quite as effectually as the church. A groined ceiling with many ribs, and with surfaces meeting at many angles, is far more successful; and so also are many forms of roof, not too steep in pitch, and with the central part flat. For singing, and perhaps for speaking, wooden ceilings also are better than stone or plaster ones.

There is another point at which traditional ideas of architecture come into collision with the practical necessities of a building meant for preaching in; and that is, on the question of height. A congregational building cannot, consistently with success, be lofty in proportion to its size. Here arises a difficulty in design; for where there are galleries, some considerable height in the walls is unavoidable. The most obvious and effectual remedy is probably to start the ceilings as low down as the need for light and air will allow, and to take care that they do not run high at any point. Great height—by which I mean, in a building with only one tier of galleries, a height of more than 50 to 60ft. at the utmost, and at the extreme point—is most exhausting to a speaker. It is equally painful to the audience, who are vainly trying to understand utterances which have gone up amongst the clouds, and are far above the level at which human beings habitually dwell. Experience seems to show that, in large central-area buildings, the extreme height in the centre should not, as a rule, exceed the width of the area from column to column. Thus, if the central space be 50ft. wide from column to column, the extreme height inside should not be more than 50ft. If the area be 60ft. or more from column to column, the extreme height should not exceed 60ft.; and if, with due regard to the shape of the ceiling (which should not be flat, except near the middle), it can be kept down to 50ft. or 55ft., so much the better both for speaking and hearing.

Galleries and staircases demand a treatise to themselves. But as to the latter, I cannot see here, any more than on the protection-of-ironwork question, why people in churches and chapels should not receive as much care from the public authorities as people in concert-rooms and music-halls. More than ten years ago it was made imperative in the latter that every staircase and passage that communicated with any part of the house holding 400 people or less should be 4ft. 6in. wide; with any part holding 500, 5ft. wide; holding 700, 6ft. wide, and so on up to 9ft. wide; that there should be at least one general staircase from all floors in addition; and that those neck-breaking and death-dealing contrivances called winders and winding stairs should be entirely prohibited. This, at least, has been the law in London; and why it, or some improvement on it, should not be applied to all public buildings, it is difficult to understand. The subject of gallery design is mainly an architectural one. The beautiful examples from Mr. Pearson's work to which your article of last week refers, and to which should be added an admirable piece of design in his new church at Bournemouth, are of too monumental a type to suggest much for use in congregational buildings. On the other hand, the clumsy wooden galleries which even Wren's genius could not prevent from being terrible disfigurements to his churches, and the baser imitations of them in the older and newer meeting-houses of the last and the present centuries, are not things of which this generation need desire to see much more.

For any really valuable suggestions—at least, relating to central-area churches—we must turn, I think, to the ancient central-area churches themselves, and especially to the examples which your article quotes at Ravenna and Milan. We might learn from these that galleries should not run horizontally across the main columns, nor even horizontally between them. Treated in this way, they are too prominent, too overpowering, too destructive of the architectural lines of the columns. But if planned with a concave sweep in each bay, and this sweep not continuous, but having the main column at a point or cusp of the curve, they will fall back into their places, and while not less useful than before, will do their work with something like modesty and grace.—I am, &c.,

James Cubitt.

HOUSING OF PAUPER LUNATICS.

Sir,—In my letters addressed to you during the past two weeks, I reviewed those clauses of the housing of the Working Classes Act, 1890, which are likely to become not less useful to the architect than the public generally, and now turn from this subject to the housing of the pauper lunatics, and its growing importance also to the architectural profession.

The working classes may be housed at a cost of £30 per head (man, woman, or child); but the housing of *one* lunatic pauper costs from £130 to £200, or even much more!

On January 1st, 1890, the number of insane patients chargeable to unions or parishes in the County of London, and to the County itself, who were placed elsewhere than in buildings belonging to the County of London, was 3,419, and the great extra cost of this arrangement is a matter for serious consideration, if it be remembered that the actual increase of lunatics, in the County of London alone, is said to be at the rate of 500 per annum.

It has occurred to me that there would be a great advantage to the public throughout the whole of the country if a central architectural department could be formed (partly under the control of the Commissioners in Lunacy) for the exclusive purpose of designing and providing asylums for lunatics. It is obvious that the work in its hands would be great at the outset, and no doubt would steadily increase year by year; for London alone will have to expend at least £65,000 per annum upon new asylums. How great, therefore, would be this work for the whole country if centralised! The advantages of this arrangement would be that architectural experience also would centralise, and such a department would be able to afford to remunerate its staff of officers, for large architects' commissions would be avoided; the support of this department would be by payments to be apportioned to each district in proportion to the numbers of lunatics provided for.

Another advantage by holding all asylums in common would be to the public, who would not, as now (in such districts as the County of London), have to board out lunatics at great extra expense in asylums belonging to other counties, while having at times, in certain districts, to maintain buildings not fully tenanted.

The housing of the pauper insane has hitherto been more costly in proportion than for any other section of the poorer class. The cost of the land (of which at least one hundred acres are requisite for an asylum for 1,000 patients) is the first serious item, and its selection is a difficult matter. Suitable sites are somewhat difficult to meet with, as the requirements are so varied. The situation should be elevated, with regard to the adjacent district, with cheerful adjuncts; it should not be at an unreasonable distance from the abode of the population from whom its inmates are collected, particularly with a view to the visits of patients' friends and the supply of fuel and provisions, &c. The water supply and sewage-farming questions are also points to be considered prior to the selection of a suitable locality for the buildings. It is not unlikely that future asylums will be limited to the accommodation of 1,000 patients each. Such an asylum should not cost more than £130,000; but if erected upon the extravagant lines of some works, the cost would be nearly double.

Unnecessary expense is often incurred in the erection of asylums; unduly liberal residential accommodation is often provided for the medical officers, chaplain, and others; extravagant engineering schemes are entered upon for heating and ventilation; over-costly cooking apparatus and laundry machinery are supplied, expensive chapels are provided (for three-fourths of the patients), vast corridors of unnecessary length and width, and picturesque lodges, &c., all tend to a great outlay of public money.

I have also observed, in three or four cases, a great loss in consequence of the bad management of the levels of the large areas of land upon which the buildings are placed, many thousands of pounds sometimes being expended in bringing the earth to conformity with a building wholly unsuitable for the position.

The Local Government Act, 1888, authorises any county council or councils to join in appointing, out of their respective bodies, a joint committee for any purpose. A general combination might be of great advantage for the purpose of providing asylum accommodation.—I am, &c.,

Oct. 21. George H. Bibby, F.R.I.B.A.

A new Wesleyan chapel is in course of erection at Saltash, from plans by Mr. H. J. Snell, of Plymouth; Mr. Finch, also of Plymouth, is the builder, the amount of the contract being about £3,500.

Intercommunication.

QUESTIONS.

[10415.]—**Plaster.**—I shall be obliged if someone with experience in the construction of half-timber buildings in the North will say what is the best proportion of plaster for filling-in the panels of outside work. The studs are 3in. thick, with V-grooves filled in with stone slates in rough, small pieces.—Ebor.

[10416.]—**Association of Public Sanitary Inspectors.**—Will one of your many readers imform me how an inspector to an urban authority can become a member of the above association; or give me the secretary's address, which I have been unable to find out? —R. W., Surveyor's Office, Burnham, Somerset.

[10417.]—**Surveying.** — Will any reader oblige by plotting out a field from the following, which I have come across on page 22, of "Land and Engineering Surveying," by T. Baker, C.E.?—

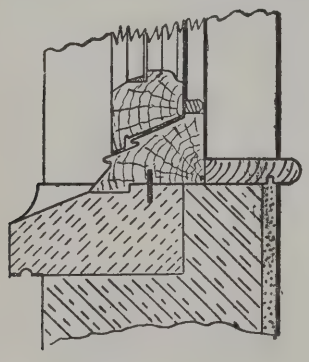
	To ⊙ F	
	970	Diag.
	520	181 B
E 290	413	
	R. of ⊙ D	
	To ⊙ D	
	744	Diag.
C 161	386	
	303	333 B
Begin	at ⊙ A	range W.

Area 4a. 0r. 19¾ p.

—Joseph Spain.

REPLIES.

[10400.]—**Weather Bar.**—"Surrey" does not say whether casement is "French" or not, whether it opens inwards or outwards, and whether it is hung folding. However, I give sketch of arrangement for casement window which should answer his purpose. Sash to open



outwards. Galvanised water-bar set in cement; sill of frame and bottom rail of sash of oak or pitch pine. In sketch, wall is 14in., stone sill 11 by 6, and oak sill 5 by 7.—N. D.

[10408.] — **Party-Fence Wall.** — "Doubtful" appears to intend to rebuild the garden wall to a greater height for the full thickness of the old wall. This he must not do without the adjoining owner's consent. He will find some extracts from legal decisions on the point in Banister Fletcher's volume on the Building Act, pp. 107-111.—Wm. Woodward.

CHIPS.

At the Exeter City Workhouse a new system of water mains, fire hydrants, and appliances, together with escape windows for the various dormitories, have been recently completed, from plans prepared by Mr. E. G. Warren, surveyor to the Corporation of Guardians, the former being carried out by Messrs. Downe and Baker, and the latter by Mr. G. Diggines, both of Exeter.

The London County Council decided on Tuesday to purchase Bostal Wood, consisting of 74 acres, of Sir Julian Goldsmid, at the rate of £200 per acre, on condition that the Plumstead district board paid half the cost. The asylums committee reported that the accommodation for lunatics would be insufficient, even when the two undertakings in progress, the new asylum at Claybury for 2,000 patients and the extension at Cane Hill for 600 patients, were complete, and recommended that preliminary steps be taken for the erection of another asylum for 2,000 patients. Consideration of the report was postponed.

King Charles of Roumania laid, on Tuesday, the foundation stone of a new railway bridge across the Danube, at Tchernavoda. The new bridge will be the longest in Europe, and will form the shortest means of communication between the North and Black Seas.

The ceremony of turning the first sod of the branch line of railway to Lee-on-the-Solent took place on Wednesday.

LEGAL INTELLIGENCE.

Action for Personal Injuries.—Important Point.—On Monday at the Shoreditch County Court, before his Honour Judge Prentice and a jury, the case of "Lane v. Ewin Bros." came on for hearing. This was an action brought by George Lane, 3, Durant-street, Old Bethnal Green-road, to recover from the defendants, Messrs. Ewin, builders and contractors, damages for personal injuries alleged to have been received through the negligence of the defendants' servants. Mr. Crispe was counsel for the plaintiff, and Mr. Tatlock for the defendants. In opening the case, Mr. Crispe said the action had been remitted from the High Court for trial. In July of 1889, the plaintiff was working for the defendants on a building partly in Berners-street and partly in Oxford-street, which was being pulled down by the defendants. The accident happened on the 25th of July. The jury should know that when workmen were desirous of lowering timber, they usually cut holes in the flooring for the purpose. They sometimes threw the pieces from the window; but if they did this it was their duty to give warning to people who might be about. On the afternoon of the accident the plaintiff had occasion to fetch something necessary for his work, and was walking between the building and the hoarding round it, when he was struck on the head by a heavy piece of timber which had been thrown by the men. No warning was given to the plaintiff by the men. He was picked up in an insensible condition, and run over to the Middlesex Hospital, where his injuries were attended to by the house-surgeon. In consequence of the accident the plaintiff was unable to follow his employment for eight weeks. The plaintiff, George Lane, was called, and in answer to his counsel, said he was a builders' foreman, and he also took contracts. He was working for the defendants under a verbal contract, and was to be paid the sum of £10 for shoring up the party-walls. There was a hoarding round the building. There were a number of doorways in the hoarding, and he was walking to one of these when the piece of timber fell upon him. There were holes in the flooring for the purpose of lowering the materials down. These holes were called in the trade "wells," or "pitch-holes." He was walking to the door in front of the hoarding to get something to sharpen his saw with when he was struck on the head. He was knocked down and rendered unconscious. The piece of timber that struck him was about 7ft. long, and weighed about 24lb., perhaps more. The medical man who examined him at the hospital had since gone abroad. He had a cut across the head about 3½in. in length, and another at the back of his head about 1½in. He went back to his work on the Monday following the accident, but he was unable to do any. He was suffering from giddiness. He superintended the work for a few days. He afterwards became worse, and was attended by another doctor. On his advice he did not attempt to do any work, as it was necessary that he should have a clear head. He had been a builder's foreman for fifteen years, and his average earnings amounted to £3 per week, and he lost that for eight weeks. When materials were thrown, it was the custom in the trade for a man standing at the top to shout "below." In cross-examination, plaintiff said he had been used to the pulling down of houses. He supposed that the hoardings around buildings were for the purpose of keeping people from being injured. There was a space of 5ft. between the building and the hoarding, and he was walking in that space when he was struck. He was employed by Mr. James Ewin. Mr. Tatlock asked whether plaintiff was to find the labour, and at first he said "Yes"; but he afterwards corrected this, and said that Messrs. Ewin were to find the labourers for the job. He was with one firm for twelve years. On this job he was never warned when timber was being thrown out. He had been there a fortnight when the accident happened.—George Thorndyck said he was foreman to Mr. Wood, a builder, at Bethnal Green. If timber or materials were thrown from the window it was the custom to have two men, above and below, to give warning.—Edward Runnicles, a master builder, of 102, Lefevre-road, North Bow, corroborated, and this closed the plaintiff's case.—Mr. Tatlock submitted that there was nothing to go to the jury. He contended that the plaintiff was a contractor.—The Judge: He has not proved that the timber was thrown. A long argument ensued, and in the result His Honour said he would non-suit the plaintiff; but as the question as to whether he was a contractor, in the legal sense of the word, was an important one, he would give him leave to appeal.

The Relation of Builders and Architects.—In the Southwark County Court on Monday, before His Honour Judge Holroyd, the Adamant Company, of Birmingham (London agents: Kinnard, Collins, and Co.), sued Messrs. Pacey and Clark for £32 1s. 4d., for work done and goods supplied. The action was a remitted one. Mr. A. K. Loyd, instructed by Messrs. Robinson, Preston, and Steen, appeared for the plaintiffs, and Mr. Marshall for the defendants. Counsel's statement of plaintiffs' case was that defendants were engaged in certain work upon the Jacob's Well public-house, Hanover-street, Spitalfields. In the specification it stated that ordinary lath and plaster was to be used in the work; but there was a provision, giving the architect power to vary the specification, the amount to be paid under the contract being increased or reduced, according to the character of such variation. In the course of the work, the architect, Mr. Archer, came to the conclusion that a quicker drying plaster than the specification provided for was necessary, and instructed the builders to use the Adamant Company's materials. The materials were supplied and the account subsequently applied for by the London agents. They were first told that the builders must see the architect before the account was paid, but afterwards no progress towards the settlement of the account could be made.—Mr. Thos. S. Archer, the architect, gave evidence that the cement he ordered the builders to use was not more costly than the specification provided for. He never told the builders he would pay the Adamant Company's account. He only put the builders in communication with the company. Cross-examined, he had not long ago £140 in hand of the contract money, out of which he paid the district surveyor's fees, paving fees, &c. He had some money in hand now, but it was claimed by a lot of people, creditors of the defendants, and he had put it in the hands of his solicitors. He could have paid the Adamant Company's account; but why should he have made them preferential creditors?—The defence set up was that defendants had never given the company any order at all. Mr. Clark went into the witness-box, and swore to this, and that he told the representative of the Adamant Co., that he was not responsible for the payment. In cross-examination, he admitted that on the day the architect told him to use Adamant cement, he wrote to the London agents and asked them to give him a call in the morning. He would not have consented to the change in the material to be used, without an understanding with the architect as to who was to pay the account, as it would involve extra expenditure.—His Honour, in summing up, pointed out that it was clear defendant sent a post-card to the London agent for the plaintiffs to come and see him. Afterwards they sent in materials, which were used. Defendant never said he did not want the goods. Invoices were sent in, and no objection made till the agents tried to collect the account. Judgment must be given against the defendant, with costs.

CHIPS.

Mr. Harry W. Taylor, of Birmingham, has been appointed as sanitary inspector and surveyor to the Market Bosworth rural sanitary authority. He has lately been engaged as assistant surveyor and clerk of works on two sewerage contracts at Coalville, for the Ashby-de-la-Zouch rural sanitary authority. He is at present engineer to the sewerage works at Rathy for the Bosworth board, and entered on his new duties on Oct. 22.

On the occasion of the Bishop of Chester's visitation of clergy on Tuesday, the Duke of Westminster presented a pastoral staff to the Bishop at the entrance of the choir of Chester Cathedral. The staff was surmounted by a silver-gilt cross, the centre circle of which displays figures of Christ and the Virgin Mary. Effigies of the ancient saints, of Abbot Richard and Bishop Pearson, all locally connected, ornaments the standard, and the staff is jewelled with topaz and other stones.

The township commissioners of Bilston have adopted plans by Messrs. Martin and Cox for the proposed new bath.

The committee of the Science and Art Schools, at Gloucester have received a letter from Mrs. Price offering to give the sum of £5,000, the estimated cost of carrying out the designs of Messrs. Waller and Son, of Gloucester, for a new school of art on a site already purchased, as a memorial of her late husband. The offer, which obviates the necessity for an appeal for funds for the new building, has been accepted.

At a meeting of the common council of the City of London on Tuesday the Lord Mayor read a letter from Mr. Onslow Ford, A.R.A., stating that it would afford him much pleasure if the Corporation would accept from him, as a gift, his statue of Mr. Henry Irving as "Hamlet," which has been exhibited at the Academy, to be permanently exhibited in their Art Gallery at Guildhall. The offer was gratefully accepted.

A convalescent home for women and children was dedicated at Otham, near Maidstone, last week. It consists of two large wards with four beds in each, two single wards, a sitting-room, and a matron's room, each 23ft. 6in. by 16ft. 6in. The building was designed by Mr. Richard Creed, of Finsbury-circus, and was erected by Mr. Avard, of Tonbridge-road, Maidstone.

WATER SUPPLY AND SANITARY MATTERS.

Grays Sewerage.—The Local Board of Grays Thurrock, in Essex, lately advertised an open competition for the best scheme for the sewerage and sewage disposal of the town. The present population is 12,000, and it is rapidly increasing. The Local Board have unanimously selected a scheme prepared by Mr. W. H. Radford, C.E., of Nottingham, and he has been engaged to superintend the execution of the works. The pumping station will be placed on the east side of the Marsh-road, and the whole of the sewage will be brought down to the site by gravitation through 8½ miles of pipe sewers. One of the most important features of the scheme is that there will only be one pumping station, and with a storage-tank for the reception of the night sewage. The pumps will only be required to be worked by day, unless there is an exceptional storm. The pumping machinery is in duplicate, and it will raise 120,000 gallons per hour. The sewage will be pumped a lift of 97ft. to the Lodge Farm, where it will be purified by broad irrigation on 93 acres of light dry land, eminently adapted for the purpose. Ten acres will be laid out as a special intermittent filtration area. The land would suffice for a population of 30,000 if necessary. All surplus storm-waters will flow into the Thames by gravitation at low water, and will be pumped into the Thames at high water. Tidal and automatic flushing arrangements are provided. Mr. Radford proposes a separate system of five miles of pipe sewers for road surface-water, which will be stored in open back-waters during high water, and turned into the Thames by gravitation at low water. The total cost of the engineering works will be £19,400.

Matlock Bridge Waterworks.—The Waterworks Company at Matlock Bridge have called in Mr. W. H. Radford, C.E., of Nottingham, to report whether it is advisable to increase the present supply of water; and, if so, which of the springs in the neighbourhood would form the best source of additional supply.

STATUES, MEMORIALS, &c.

Plymouth.—The Duke of Edinburgh unveiled on Tuesday, the anniversary of the Battle of Trafalgar, on Plymouth Hoe, the memorial erected by national subscription to commemerate the defeat of the Spanish Armada. The memorial originated in the statue erected to Drake some years ago, when it was thought that all the heroes who distinguished themselves in opposing the "invincible" ships of his Spanish Majesty should have some enduring monument erected to their prowess and patriotism. The leading feature of the monument is a figure of Britannia, who, placed high on a pedestal of granite, overlooks the Plymouth Sound as if keeping watch and guard against the approach of another Armada. By her left side stands a lion, also in a watchful attitude, and various martial trophies surround the monument. Below the main figure, which is in bronze, and has been executed by Mr. W. G. May, of London, are medallions of the Elizabethan heroes, and still lower down are the arms of various towns that contributed to the defence of the nation during Armada days. The architect of the memorial is Mr. Herbert A. K. Gribble, whose design, selected in competition, was illustrated by us May 4, 1888.

Messrs. Jones and Willis have on view at their showrooms, in Edmund-street, Birmingham, an oak reredos, which they have executed for erection in Boylestone Church, Derby. The reredos, which was designed by Mr. Naylor, of the firm of Naylor and Sale, Derby, has as its subject "The Lord's Supper," and the illustration is remarkable for the depth of the carving. The subject is beneath a canopy of three arches, surmounted by carved crestings.

The erection of the Robertson drinking fountain has just been commenced on Bondgate-hill, Alnwick. It is to be Italian Renaissance in character and constructed of local freestone, the architect is Mr. George Reavell, jun., of Alnwick.

A mural tablet of English alabaster is about to be placed in the Baptist chapel at Tiverton, as a memorial of the late Mr. Powell, the choirmaster, treasurer, and Sunday-school superintendent. Mr. Harry Hems, of Exeter, is executing the work.

An exhibition of carpets, to contain a complete collection of modern model carpets from Oriental manufactories, will be held in Vienna, at the Commercial Museum, from the 1st of April till the 15th of June next year.

At the last meeting of the Newcastle Corporation Mr. W. D. Cruddas, one of the Directors of the Elswick Works, made a gift of more than four acres to the city for a recreation ground. The open space is in Scotswood road, near the works, and is valued at £10,000. There are now eight public parks in Newcastle.

Our Office Table.

The annual report, calendar, and list of members of the Architectural Association, familiarly known to students as the "Brown Book," again shows an increase in bulk, the number of pages having been raised from 176 to 192. The annual report of the Committee records the completion of an eventful session, which has been marked by the termination of the labours of the Special Committee on Education, and the presentation of its report. Papers were read last session by Messrs. F. T. Baggallay, B. F. Fletcher, E. P. Warren, R. T. Blomfield, S. B. Beale, Arthur Cates, E. W. Mountford, R. Elsey Smith, W. A. Pite, Henry Holiday, A. E. Bartlett, and Keith D. Young. The work of the classes has been maintained with varying success. The attendance has in several cases decreased, while there is, the committee think, gratifying evidence of more thorough and continuous work in almost every class. The courses of lectures on Architecture, and Construction, and Geology, delivered by Messrs. H. Stannus, F. R. Farrow, and Weldon, were also attended by a smaller number of members than in previous sessions. Perhaps, as a consequence of the falling-off of the classes, the library records show a considerable decrease in the total number, both of readers and of books borrowed. *Per contra*, the sessional and vacation visits were well supported; but the substitution of a supper for the annual dinner did not result in an increase of attendance. The accounts for the year show a total increase of over £960, and the balance in hand has increased from £117 10s. 10d., at which it stood a twelvemonth since, to £128 11s. 5d. The roll of membership is the longest yet attained in the history of the association, being 1,129, an increase of 35 on last year. The proportion of metropolitan members is still very large, being 827 against 302 resident elsewhere.

The School Board for Bath were informed at their last meeting that, in response to the advertisements issued inviting plans for new schools from the architects of the city, only one set of plans had been received, from Mr. C. Bryan Oliver. That gentleman was, however, one of the eight signatories to a memorial from Bath architects, presented by Mr. W. J. Willcox, county surveyor. In this protest they called attention to certain conditions which are now recognised in the profession for conducting public competitions. (1) That the architect whose plan is selected shall be employed to carry out the work at the usual charges. (2) That certain premiums shall be offered to two or three at least of the non-successful competitors. (3) That a qualified professional assessor be appointed to adjudicate on the plans, and his award to be final. (4) That the plans not adopted be returned to their authors. The reading of this gave rise to an exhaustive discussion. Mr. Quin said it did not matter twopence about architects or their views; what did matter to them as a board was to get the best value for their money. The Rev. G. Bowden moved that an assessor be employed, and that a premium be paid for the second and third best set of plans. The clerk, however, declared that the Education Department would not allow the payment of premiums, and it was decided that inquiries be made of the Department on the point. There was a general feeling that an assessor be appointed, to act only as an adviser to the board, who should reserve to themselves the right of the final decision. The clerk's confident and reiterated assertion that the Department would not sanction the offer of premiums is rather surprising, and suggests that he cannot know what is being done in other towns. Curiously enough, on the previous day the Oldham School Board decided, after a long discussion, to give premiums of £50, £15, and £10 for the proposed Coppice School in that borough, and to appoint an assessor.

The use of cork as a covering for steam-pipes is largely adoped in France. The same covering is recommended as a protection of water-service pipes against frost. The cork is cut to fit the pipes in the form of pieces, with radial joints, then bound round by wire; or bands of cork of certain thicknesses to suit different sized pipes are wound round the pipes, these being lapped spirally round, and covered by another band of waterproof canvas in the same manner, and afterwards covered by a thick coating of tar. Great economy in fuel has been proved in the case of pipes so heated. It is stated that a cast iron pipe, 10in. diam., so covered, showed a saving of 38s. per square yard of surface for 300 days of 12 hours. For service pipes and elbows, especially those which come through areas, and are placed in outer walls, the use of the cork casing would be an advantage, and its cost soon saved by immunity from bursting during frost.

An examination in the theory and practice of plumbing, under the auspices of the local District Council, for the purpose of granting certificates of registration, took place at the Merchant Venturers' School, Bristol, on Saturday last. Candidates attended from various parts of the district, and the practical work comprised leadbossing to a given shape and joint-wiping, and the theoretical questions which were sent down in a sealed envelope by the Worshipful Company of Plumbers were such as to test the candidates' knowledge of materials, internal and external work, sanitary arrangements, and water supply. Unfortunately, none of the candidates was able to satisfy the examiners, who were Mr. W. Titmas, R.P.C., representing the Worshipful Company of Plumbers, Mr. T. S. Pope, architect, Bristol, and Messrs. G. Bracher, W. H. Perry, T. J. Edmonds, and W. H. Hobbs on behalf of the Local Council. Some of the candidates showed a fair amount of intelligence, and all were advised to devote time to study and present themselves at the expiration of twelve months.

CHIPS.

Lord Stanley of Preston, the Governor General of Canada, opened the Cape Breton Railway from Hawkesbury to Sydney on Saturday. The Viceregal train was the first to pass over the bridge spanning the grand narrows of the Bras d'Or Lake, which has been erected at a cost of 500,000dol.

The Ayr Public Library Committee have agreed to advertise for competitive plans for the new public library. The site is to cost £1,825, leaving £8,175 for the building.

The *Bosphore Egyptien* for October 1 announces an act of astounding vandalism. Three gangs of workmen, under two local sheikhs, are daily extracting blocks from the lower courses of the two largest Pyramids of Gizeh. These are broken up on the spot, and carried away on camel-back for building purposes. The sheikhs allege that they are doing this work of destruction by permission of the Egyptian Government; whereas they have, it is said, obtained only a permit authorising them to remove scattered blocks.

A new theatre is about to be built on the site of houses demolished in Cranbourne-street and Cranbourne-court, Leicester-square, for Miss Huntingdon. Messrs. C. J. Phipps and Spender Chadwick are the architects.

Churches have lately been built in the Kiwitea and at Dannevirke, New Zealand, from designs of Mr. F. de J. Clere, F.R.I.B.A., the Wellington diocesan architect. The same gentleman is preparing plans for the enlargement of the church at Palmerston North, and a new church at Waitotara, both in New Zealand.

The committee of the Nicholson Institute at Leek, to be opened on Nov. 6th, have accepted from Messrs. W. Sugden and Son, the gift of four models, by Mr. Benjamin Creswick, for emblematic statues on the façade of the Newcastle-unde-Lyme municipal buildings. The models are about half life-size, and are fixed upon the screen between the news-room and the entrance. They represent Painting, Literature, Music, and Architecture.

The Wakefield Union Rural Sanitary Authority have resolved to petition the Local Government Board for powers to borrow on loan the following sums—viz., £1,850 for the carrying out of a scheme of water supply to the township of Crofton; £1,400 for water supply to the township of Walton; £1,500 for the improvement of the existing water supply to the township of Skitlington; and £1,650 for the construction of a main outfall sewer for the drainage of the Common-lane district in the township of East Ardsley. The plans and estimates for these works have been prepared by their engineer, Mr. Frank Massie, Assoc.M.Inst.C.E., F.S.I.

The rapid growth of trade in Wellington, N.Z, has caused many improvements to be made in connection with its wharf and quays. Enormous sheds for the accommodation of wool and flax have lately been provided, and now the Harbour Board, which is one of the most flourishing in the southern hemisphere, is about to build in brick new offices and bonded warehouse. Mr. F. de J. Clere, F.R.I.B.A., has been intrusted with the preparation of the designs, and the building, when completed, will be one of the largest in Wellington. It will have an area of 9,300ft., and a cubical capacity of 497,550ft.

MEETINGS FOR THE ENSUING WEEK.

Friday.—Architectural Association. Discussion on "The Past, Present, and Future of the Association." 7.30 p.m.

Saturday.—Working Men's College. Free lecture by Miss Jane Harrison, "The Parthenon Marbles, and their special relation to recent investigations." 8.30 p.m.

Architectural Association, 9, Conduit-street, W.—The 2nd Ordinary Meeting will be held on Friday, Oct. 31, at 7.30 p.m. Papers by Walter Millard, A. Beresford Pite, A. Needham Wilson, and Owen Fleming, on "The Past, Present, and Future of the Architectural Association."

Fred. R. Farrow, Ernest S. Gale } Hon. Secs.

CHIPS.

The parish church of Braunston, Rutland, was reopened last week, after the restoration of the nave, from plans by Mr. J. C. Traylen, of Stamford. The chancel was restored two years since. The present section of the work includes the repairs of all masonry, the removal of the old floor, and relaying of the entire area with wood blocks on a concrete foundation, reseating in oak, and the restoration of the ancient font, which had been broken up and buried by a former vicar. Mr. Halliday, of Clipsham, was the contractor, and the outlay has been £450.

The Carlisle city council have received a report on the new public market, stating that the total cost of the undertaking will be £42,172. When the design of Messrs. Cawston and Graham, of London, was selected in competition, that firm estimated the outlay at £19,280; but the accepted tenders for the separate trades reached £26,724, an amount considerably augmented by the failure of the original contractor for the ironwork to execute his undertaking.

A pulpit is to be erected in the nave of Manchester Cathedral, as a memorial of the late Dean Oakley.

A memorial to Alexander L. Holley, the United States engineer and inventor, was unveiled in Washington-square, New York city, on the 2nd inst., in the presence of the members of the Iron and Steel Institute of Great Britain. The memorial is a bust of bronze, modelled by Mr. J. Q. A. Ward, and is set on a pedestal of limestone.

Dissolution of partnership is announced as between W. H. Croaker and F. Croaker, of Great Dover-street, Southwark, builders and contractors.

The church of St. Boniface, Nursling, near Southampton, was reopened on the 16th inst., after restoration. Between £400 and £500 has been expended upon the restoration. Mr. F. W. Kinneir Tarte, of Furnival-street, E.C., was the architect, and Mr. T. Ware, Nursling, the builder. The plaster ceiling in the Mill chapel has been replaced. The floor of the chancel has been raised, and the steps altered. The walls of the nave have been re-plastered, and for the old ceiling a new one in panelled wood has been substituted. From the floor of the nave the old tombstones have been removed, and a new pitch-pine block flooring substituted. The external improvements include a partially new roof, and the raising of the north and south gables. The pulpit, which dates from the 17th century, has been restored by Mr. C. G. Stuart Menteth.

The opening services were conducted on the 16th inst. in the new Free church at Haddington. The building has been erected at a cost of over £5,000, and occupies a prominent site at the west of the town. The architects are Messrs. Sydney Mitchell and Wilson, Edinburgh.

The foundation stone of a new Free Methodist church at Workington was laid on Thursday, the 16th inst. The cost of the new edifice, of which Mr. J. Smithson Moffatt, M.S.A., of Whitehaven, is the architect, will be £900.

The first stone of the new fruit and vegetable market, in Farringdon-road, was laid by the Lord Mayor on Wednesday. The building, which will be erected at the corner of Charterhouse-street and Farringdon-road, will be of iron and glass. The design is by Mr. Alexander Peebles, the City architect. The contract for the substructure and basement work has been taken by Messrs. Rudd and Son, of Grantham, at £41,973. The estimated cost of the superstructure is £15,000. The market will form part of the central group of markets upon which, during the past forty years, the Corporation has spent £3,210,000, of which total the Central Markets in Smithfield represent £1,760,000.

A new roof, ceiling, and other alterations to Rehoboth Chapel, Llangollen, have been completed by Mr. Isaac Roberts, builder, Llangollen. The gas-fittings were supplied by Messrs. Jones and Willis, Birmingham. The total outlay was about £600; the work was carried out under the superintendence of Mr. Richard Davies, architect, Bangor.

The engineer to the London County Council, Mr. A. R. Binnie, has made an exhaustive report on the water question, and is of opinion that a new and independent supply from the Welsh mountains would be one of the best modes of solving the problem now before Londoners. In regard to the "pipe" objection, he observes that this a difficulty which he could readily overcome.

In our report of the dedication of the new Roman Catholic church at Cambridge, we should have said that the whole of the sculpture and carving of the exterior (with the exception of that at two entrances) was executed by Mr. James Ovens, of Aqueduct-street, Preston, who also did part of the internal carving, on which Messrs. Rattee and Kett, of Cambridge, and Mr. R. L. Boulton, of Cheltenham, were also engaged.

The first meeting of the forthcoming session of the Institution of Civil Engineers will be held on Tuesday evening, Nov. 11th.

The parish church of Hipswell, near Richmond, Yorks, which still retains its high pews, is about to be restored, a meeting having been held in the parish last week, at which a committee was appointed and substantial offers of money were made.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

Alnwick.—For paving and channelling a new street, from South-road to Wagon-way, for the local board. Mr. G. Wilson, surveyor:—

Weatheritt, W.	£32 0 0
Whinham, J.	31 10 0
Wilson, J., and Son (accepted)	30 0 0

Croydon.—For the erection of board schools at Woodside:—

Bullock, A. (accepted)	£7,494 0 0

Batley Carr.—For the erection and completion of two houses, &c., at Batley Carr. Messrs. P. Spencer and Son, Batley Carr, architects. Quantities by the architects:—

Masons:—Oldroyd, J. and T., Batley.
Joiners:—Richardson, J., and Sons, Staincliffe.
Plumber and glazier:—Shepley, J., Dewsbury.
Painter:—Lodge, J., Batley Carr.
Plasterer:—Parker, W., Heckmondwike.
Slater:—Hargreaves, G., Dewsbury.
Ironfounders:—James, W., and Sons, Dewsbury.

Brentwood.—For the erection of house and shop, Station-road, Brentwood, for Mr. H. Owen, J.P. Mr. W. G. Shoebridge, 158, Strand, W.C., architect:—

Turtle and Appleton, Wandsworth	£810 0 0
White, A., and Co., Rotherhithe	797 0 0
Winter Bros., Brentwood	757 0 0
Rogers and Robson, Brentwood	739 0 0
Barrett and Power, Hackney*	630 0 0

* Accepted.

Brockley.—For alterations to 183, Brockley-road, for Mr. T. W. Oxley. Mr. J. J. Downes, 11, The Parade, Lewisham High-road, architect:—

Mould, W.	£197 10 0
Wilson, A.	195 0 0
Hughes and Son	150 0 0
Best, S. (accepted)	134 15 0

All of Brockley.

Burnham, Essex.—For alterations and additions to the Queen's Head p.h., for Messrs. Gray and Son. Mr. P. M. Beaumont, A.M.I.C.E., Maldon, architect:—

Cook, A. M., Burnham	£250 0 0
Read, C., Burnham	248 5 0
Collins, C. C., Tillingham (accepted)	220 0 0

Buanham, Essex.—For alterations and repairs at the Victoria p.h., for Messrs. Gray and Son. Mr. P. M. Beaumont, A.M.I.C.E., Maldon, architect:—

Collins, C. C., Tillingham	£100 0 0
Read, C., Burnham	89 10 0
Cook, A. M., Burnham (accepted)	88 0 0

Folkestone.—For alterations to the town hall, for the corporation:—

Payer, A. E., Folkestone (accepted)	£3,785

Gosport.—For building new drill-shed at Gosport, for the 2nd Hants Artillery Volunteers. Messrs. Rake and Cogswell, architects:—

Croad, J.	£890 0 0
Morgan, Isted, and Morgan	795 0 0
Dugan, J.	792 0 0
Lewis, D. W.	777 0 0
Bevis, F.	770 0 0
Lowe, W.	740 0 0
Beech, G.	740 0 0
Hall, T. P.	695 0 0
Daish, C. M.	685 0 0
Crockerell, J. (accepted)	644 0 0

Hoxton.—For rebuilding No. 58, Hoxton-square. Mr. W. H. Duffield, architect:—

Goodwin	£2,597 0 0
Ashford	2,370 0 0
Shurmur, W.	1,980 0 0
Castle	1,947 0 0
Wales, B.	1,775 0 0

Hull.—For the erection of the proposed Hymer's College, Hull, including the addition of dining-hall to the existing house. Messrs. Botterill, Son, and Bilson, 23, Parliament-street, Hull, architects. Quantities by the architects:—

Hockney and Liggins	£15,650 0 0
Blackburn, F.	15,622 0 0
Jackson, G., and Son	14,850 0 0
Harper, M.	14,153 8 0
Skinner, J. T.	13,290 0 0
Marsden and Hodson	12,892 11 0
Houlton, G.*	12,883 0 0

All of Hull.

* Recommended for acceptance.

Kingsland.—For new workshops at No. 167, Kingsland-road, for Messrs. J. J. Bennett and Son:—

Shurmur, W. (accepted)	£1,945 0 0

Landport.—For certain alterations and additions to the Working Men's Liberal Union, Landport. Messrs. Rake and Cogswell, architects:—

Roberts	£830 0 0
Matthews Bros.	795 0 0
Beden, J.	753 0 0
Boulton, F.	699 0 0
Beech	630 0 0
Scammell and Dowdell	625 0 0
Evans, H.	610 0 0
Bowler	591 0 0
Beaton	576 14 2
White and Sons	560 0 0
McPhail	559 0 0
Porter, A. E.	555 0 0
Dawson, C., Jun.	530 2 6
Nobes and Sons (accepted)	514 15 0

London.—For pulling down and rebuilding the Mansfield Arms p.h., Mansfield-road, Kentish Town, N.W., for Mr. R. Davies. Mr. A. E. Pridmore, architect:—

McCormack and Sons	£5,477 0 0
Taylor and Son	5,297 0 0
Julian	4,990 0 0
Evans	4,835 0 0
Lamble, S. R.	4,561 0 0
King and Co.	4,557 0 0
Mills	4,517 0 0
Toms	4,469 0 0
Salter	4,429 0 0
Killby and Gayford	4,368 0 0
Allen and Sons	4,348 0 0
Lundy, S. H. (accepted)	3,389 0 0

London.—For finishing and fitting up the following premises, for the London and Suburban Co-operative Stores, Ltd.:—32, Charing Cross-road; 65, Holloway-road; 305 and 306, Upper-street, Islington. Mr. J Waldram, C.E., 13, Buckingham-street, W.C., surveyor:—

Fell, J., Leamington (accepted).

London.—For reconstructing the steps on the east and west sides of Waterloo Bridge, for the London County Council. Mr. T. Blashill, superintending architect:—

Mowlem and Co. (accepted)	£1,282 0 0

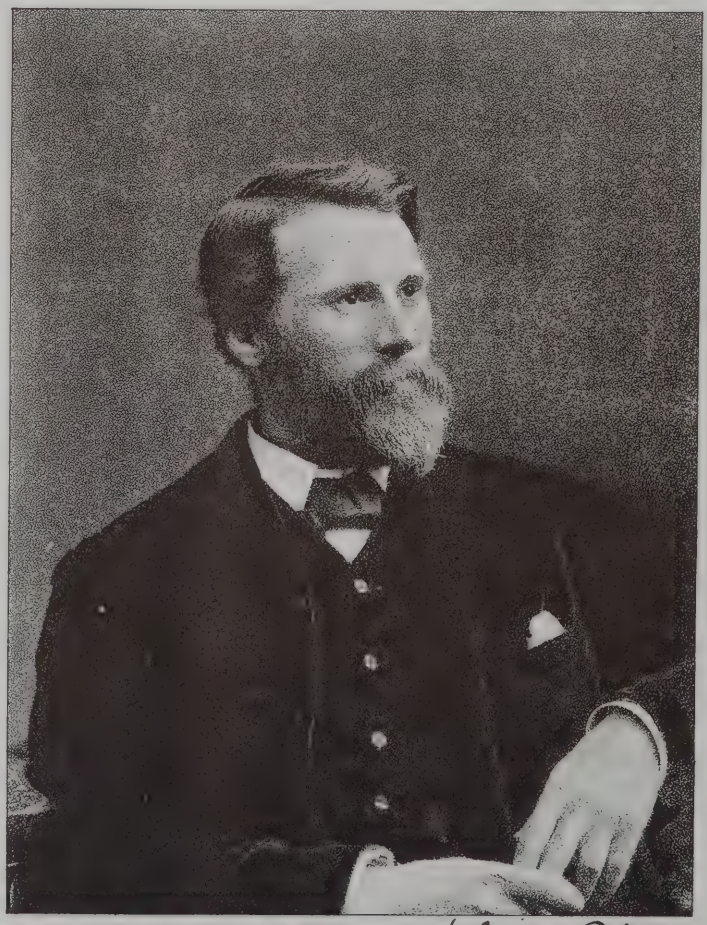


Thos Brock RA

THOS · BROCK · ARA



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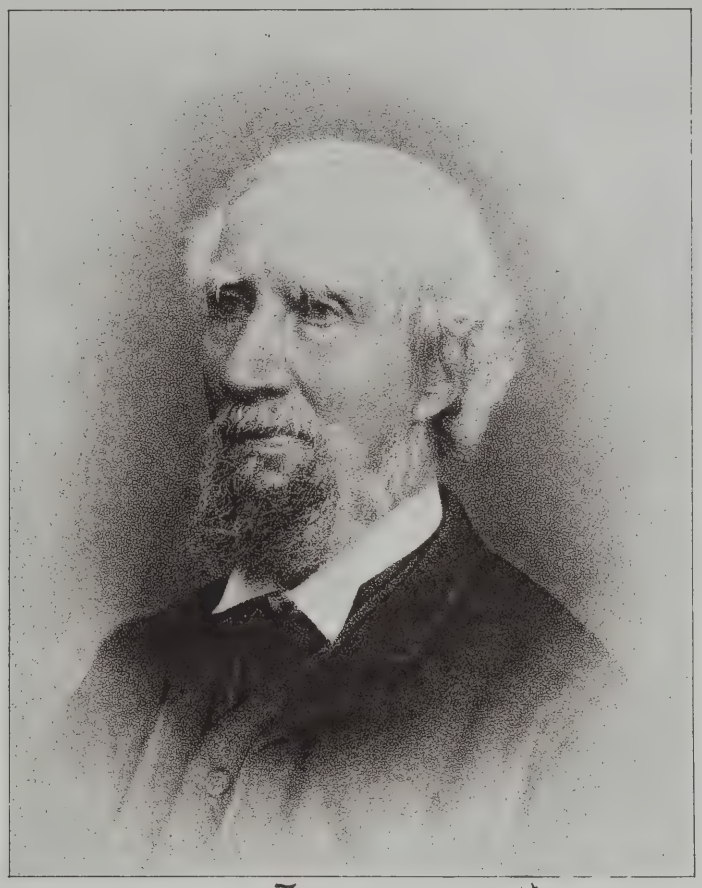
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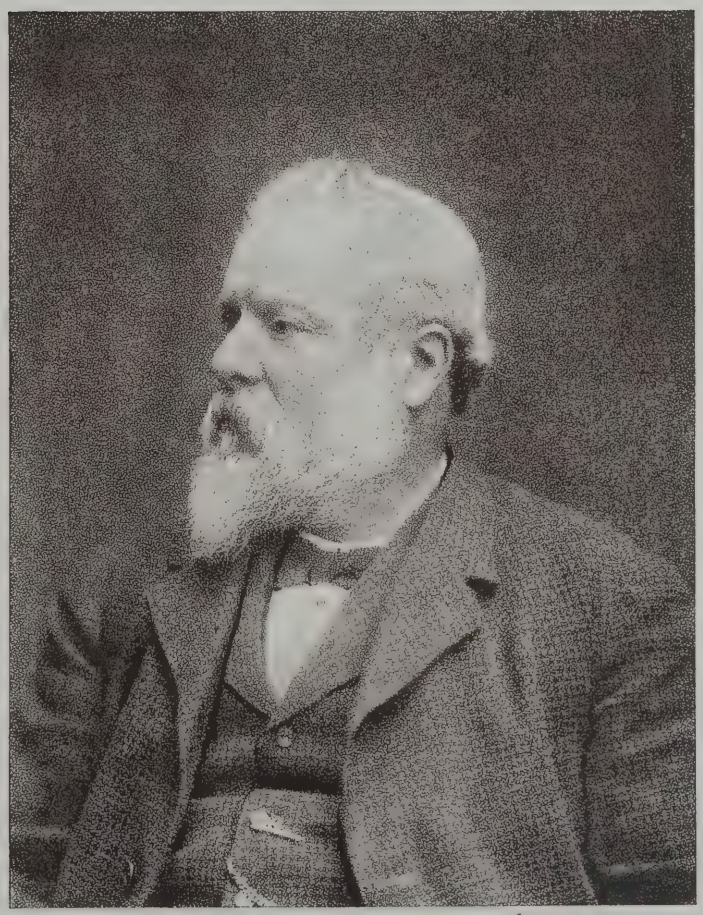
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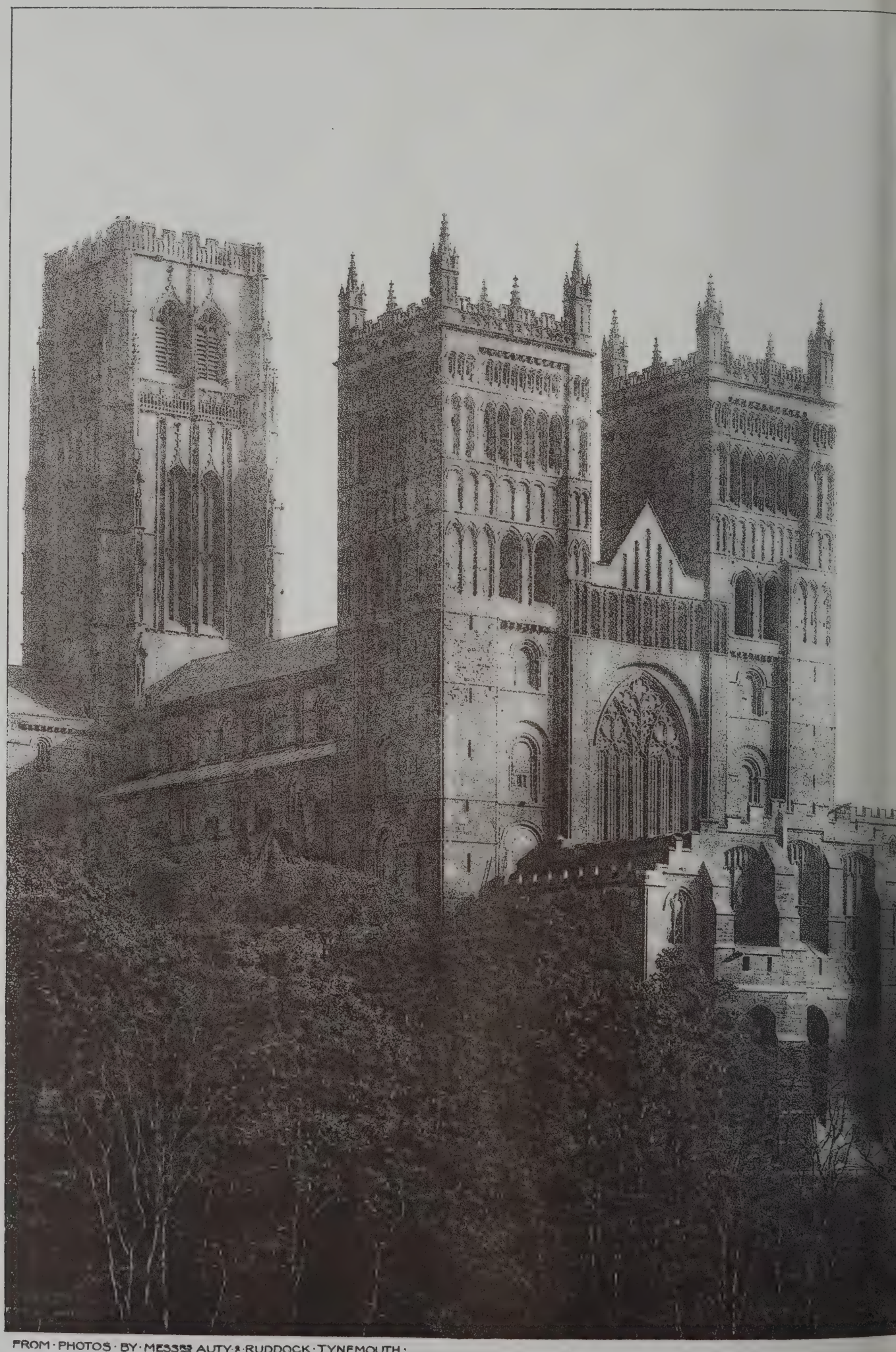
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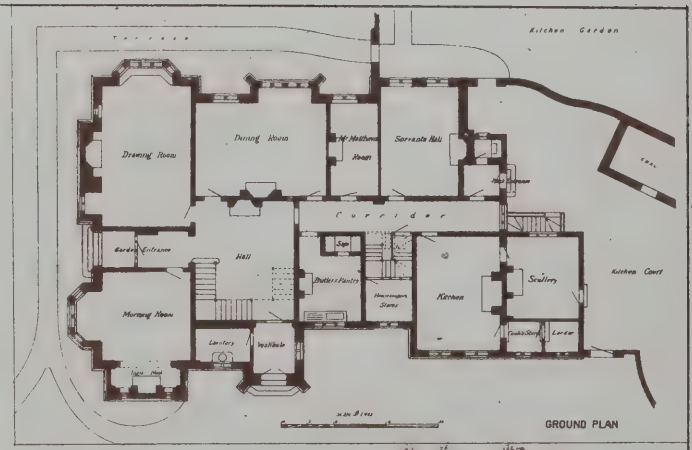


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VOL. LIX.—No. 1869.
FRIDAY, OCTOBER 31, 1890.

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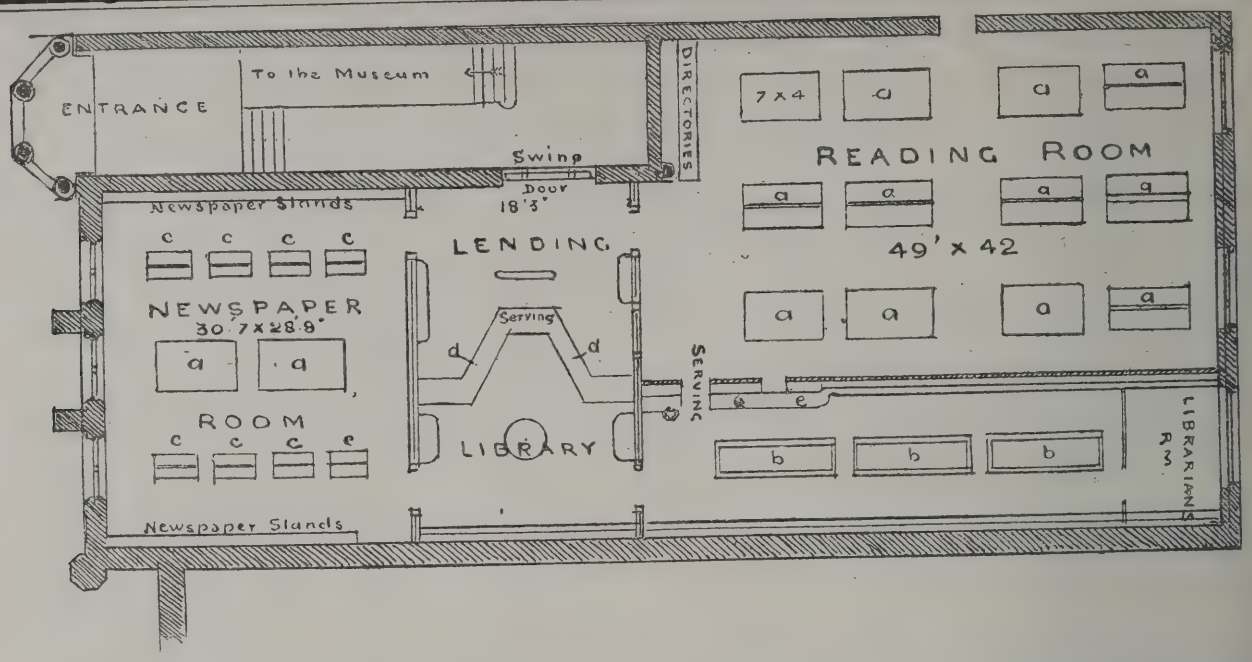
COMPETITION awards, if they do not satisfy those who are candidates, may least endeavour to disarm opponents. he frequency of competitions ought to have ught promoters and architects the necesty of observing some laws for their guidnce. Assessors, after all, are but human, nd are apt to make mistakes in their ecisions, like judges in Courts of Law freiently do. It may be of some advantage call attention to some rule of procedure in e selection of designs, for our experience competitions has shown that judges of rchitectural works are no more agreed as to ny principle of action than other judges. Ve might look back and take an historical trospect of past decisions to prove what we ve to say; we might recall the circumstances some recent competitions, but we will pare ourselves and our readers this reference. uite recent decisions have shown contractory principles of selection. What should the assessor's duties may appear to be mple enough, provided always he has the od judgment and taste which the office sumes him to possess. The task of selectg a design for, say, municipal offices, is no ght affair, for it is not merely to select the st able design as an architectural work, t involves the careful consideration of an, the convenience of public apartments d offices. If in both these respects a rtain design is better than others, it ought be selected. It may be easy to find one nich complies, in which case the task of e assessor would be easy; but he may ve to decide between a well-considered an with a poor elevation, and a weak an and artistic design, in which case nsiderable judgment and artistic skill are cessary in striking the balance of merit. ur knowledge of competitions points her to the prevalence of the association clever planning and inartistic treatnt, thus rendering it very necessary that architectural assessor should be a roughly qualified man, able to judge, not ly of an able scheme, but an artistic terior sketch. How few are strong in h aspects it is needless to say here, for committee who had the undertaking of important public building, such as nicipal offices, would naturally appoint, an assessor, one who had himself carried buildings of the class, and who had a utation for practical knowledge of their reements. His artistic ability might be, and en is, quite a secondary thought. Only then, en good plan and elevational designing synonymous, can the duties of an assessor considered light, or when the artistic nent is subordinate or immaterial to the k, as, for example, in the designs for lic baths and washhouses, union workses, and buildings of a decidedly utilian character. In these cases, plan construction are the only points to be sidered in the selection, and therefore the ies of the judge are very much easier. ut in some recent decisions merit of plan design have been lost sight of for two er considerations that ought not rightly e the conditions of a public competition. hey are, promoters ought to state so at onset. We allude to compliance with ted instructions and cost. If adherence number of conditions, including that of , are considered to be the main object of mpetition for a building, the advertise- t ought to be worded in a manner to make the meaning clear. It ought to be to the effect: "Wanted, a design to comply with certain instructions, and to cost not more than the given amount." One can hardly imagine a committee or board adopting a course so contrary to their real object, for if they did really require a design that should most closely comply with certain requirements in a technical manner, and not to cost more than a given sum, they could scarcely do a wiser thing than to get their own surveyor to prepare a set of plans. But, as a fact, the promoters of competitions desire to obtain the best design they can, and are prepared to forego any technical point if they can obtain a clever and architectural scheme. They advertise for ability and artistic taste, for if they did not they had better consult a surveyor or engineer at once. Therefore, we say that compliance with technical instruction and cost can hardly be considered as a foremost merit in selecting a design. If an assessor, acting according to his own sense of justice as to what is meritorious, considers these elements before that of skill in design, he certainly commits an error. Those who have sent in meritorious designs feel aggrieved by being rejected for having not considered some trivial detail, as the size of a room, or the easement of a neighbouring light. Those who closely adhere to printed instructions but send inferior designs, complain of injustice being done them. Both have grounds for complaining. The first-named class can justly ask what the advertisers wanted if not skill and art; the second named can plead that they have been too conscientious. The mistake is made in not knowing what is wanted: it is due to those who invite the profession on ill-judged conditions—whichever way the assessor acts, he is surely held to have done wrong.

It is useful, then, to inquire on what principle the architectural assessor should act. To answer this question, he should first learn what is required. "Is it the ablest design, or that which fits nearest the advertised instructions and pocket of the committee?" Generally speaking, he has nothing to do with drawing up the instructions: his aid is called in afterwards to assist the committee. When he has to make his own selection and report upon the designs under these circumstances, the first duty he has to fulfil is to study the instructions. Handicapped by verbal directions of the committee, he is not in a position to award the prize to a design which commends itself first to him, and his duties are too often restricted to find which design meets the requirements as to accommodation and cost. He has to make a rough estimate of the designs, or to cube them, and after he has performed this duty, he cannot reasonably do anything else than recommend the one which comes nearest the amount stipulated. To our minds this office is hardly one that an assessor should be called upon to perform, as it belongs more properly to the surveyor, who should be instructed to make rough estimates for the guidance of the assessor. It would much facilitate his duties if he were informed by the committee how the instructions were to be interpreted, to which points in them importance was to be attached. Much responsibility would be removed if the architectural assessor who accepted instructions drawn up without his concurrence, were to have the power of saying which of the instructions were reasonable or to retire from a position often rendered untenable. The same thing would be accomplished if those called in to act as judges were to formulate a certain mode of procedure or to decline to act unless they possessed certain powers. It would not be long before those who invited designs saw the importance of engaging a professional referee at the commencement, to assist in drawing up the instructions. Till then, blunders, ill-considered instructions, jobbery, and recriminations will continue. A primary condition of every selected design should be that it is the best and most skilful—that is, that its points of merit in plan, construction, and treatment are superior to others in the same competition. In every case, the kind of building will dictate to the referee which of these three elements of design ought to be first considered, or to weigh in his mind their respective merits. If the estimate is disproportionately high, and beyond the means of the committee, there appears to be no other reasonable alternative than to fall back on the second next best, if there should be one, that can be carried out within the limit set, or to abandon the competition. The assessor's duties extend no further; he would be acting wrongly to select an inferior design simply because its estimate is reasonable. Yet we have had a few of these decisions lately. Technical points must be judged according to their importance. It would not be just, for example, to select a design which greatly exceeded the limits marked on the plan, even supposing it possessed merits. The assessor is called upon to weigh the relative disadvantages of increased cost and excess of area covered, other things being equal. A few feet more of frontage, or a wrong boundary line taken for building, must be deemed a more serious objection than excess of cost. These are points about which every assessor is called upon to use his discretion. Circumstances alter cases; but a sense of proportion is demanded in taking into account discrepancies and errors. In some instances a technical mistake in the design will not be of vital importance; while in others it may become a substantial reason for rejecting the design. The recent competition for Whitefield Tabernacle has called out many criticisms and expressions of opinion on the award of an able architect, and serve to indicate the urgency of adopting some explicit line of procedure based on common-sense principles that cannot be open to animadversion. That selection did not appear satisfactory to many because merits acknowledged by the assessor himself had been set aside for other considerations less strong or convincing. The study of the correspondence in our columns is instructive on the question.

FREE PUBLIC LIBRARIES.—VI.

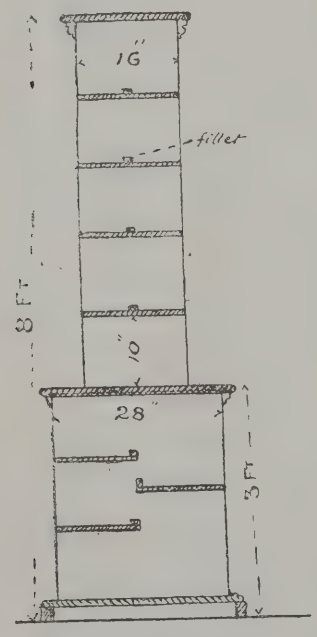
WE have referred to the indicator, the newspaper and periodical rack, and the newspaper stand, and now desire to say a few words on bookcases. We have already spoken of the modes of stacking the books or cases against the walls—whether they should be arranged flatwise with the walls, or projecting therefrom, at right angles, known respectively as the "rack" and "alcove" systems—according to one or the other of which the architect has to arrange his windows and piers. It now remains to show the construction of the shelves and uprights which form the cases for the books. The plan of shelving round the walls is not the most economical kind of storage, and the labour of finding a book is increased; but by the plan of adopting "standard" bookcases, which can be placed to form alcoves or recesses, or arranged in parallel rows with passages between, books can be accommodated on both sides, and the labour of the staff lightened. Besides which, distinct bookcases form groups of books, and admit of easier finding and classification. Thus, if the bookcases are arranged in rows at right angles to counter of lending library and between windows, considerable facility is afforded the staff.

A standard bookcase should not be of greater height than 8ft. (and contain eight to ten shelves), which is quite high enough for reaching to the top shelf on a stool or



step; when higher rooms have to be utilised, a mezzanine or gallery becomes necessary. As regards length, this dimension must be determinable chiefly by the width of room. No shelf should be longer than 3ft. 6in., if over this length shelves bend with the weight

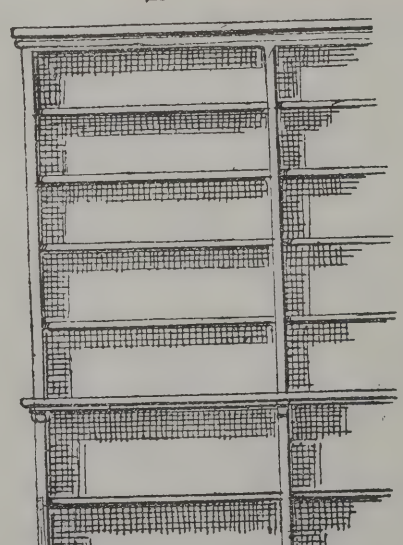
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of books; but a length shorter than this is to be preferred, and 30in. is thought to be the most desirable length. The shelves should not be less than 8in. wide and 1in. thick. The section we give (Fig. 1) shows a bookcase for a double row of books, conforming to the above dimensions. Five shelves for books are provided, the distance between the shelves being 10in. In the lower part of case large folios and quartos can be placed on both sides. It will be seen on the section that partitions between the double rows of books are avoided. These partitions obstruct the free passage of air through, and the corners are apt to accumulate dust. To obviate them, a fillet is fixed along each shelf in the centre as a stop. Sketch 3 represents a wall bookcase 8ft. high with ledged base, the latter 18in. deep and 3ft. in height. The shelves should be movable, supported on metal strips with catches. A standard bookcase, 8ft. high, will allow for 10 shelves, including the base, and these spaces will be sufficient for octavos and 12mo. books. In reference libraries, eight shelves will be found enough, as larger volumes have to be accommodated.

In the reference library six volumes per lineal foot of shelving is a good average, and for the lending library eight to ten volumes per foot. The bookcases for the reference library, which is used by the public, may be placed round the walls, and be protected by a rail about 3ft. in front; those in the lending library and stores, only accessible by the staff, should be placed transversely across the room with passages between them, each case being double, as in the standard bookcase we have shown. The spaces between bookcases ought to be about 3ft. 6in. As an example of arrangement in a public library we are enabled to give, by the kindness of Mr. Greenhough, the librarian, a detailed plan of the Reading Free Library (4). The position of the lending library and the form of the counter are worth notice; the return sides of counter, which are at an angle, support the indicators as shown in *d d*. Mr. Greenhough states that, on the

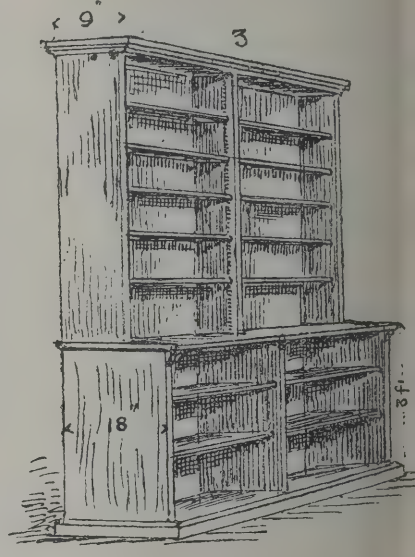
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whole, the arrangements are good, and give complete satisfaction.

The lighting, heating, and ventilation are all important considerations in a public library. Gas is so destructive to bindings, especially leather on the upper shelves, is dirty and objectionable on sanitary ground that every means ought to be taken to reduce these objections to a minimum. The noxious gases of combustion should

3



carried away as directly as possible, so that the air in the room should not be vitia... The several ventilating gas-lamps now in market meet this condition to a large ext... These inventions, which increase the i... minating power of gas by regulating pressure of delivery and by raising temperature of the air in the bur... are various and of different forms. regenerative lamps, such as Sugg's, b... on the application of heated air the burner, give powerful lights are cleanly. The "Wenham" lamp well-known adaptation of the ar... type of burner, is admirably adapted there are no shadows cast below; burner is inclosed by a glass hemisp... the air for combustion enters above the ... and becomes heated. The combus... chamber within the glass is also hot, the consequence is a steady, intense, w... smokeless flame is produced with mean... carrying off the products of combus... Strode and Co.'s ventilating sun-burn... another form, based on the right prin... in which the products of combustio... carried away. In all these forms eco... of gas, increase and steadiness of ... are secured. Mr. W. H. Greenh...

F.R.Hist.S., the librarian of the public library, Reading, read a valuable paper on this subject at the late Congress of Librarians, in which he shows that the regenerative form of the "Wenham" lamp is the most secure method against fire, and he cited a table by Professor Vivian B. Lewes, which shows that this regenerative lamp gives a higher illuminating power per cubic foot of gas consumed than other burners, also a much smaller proportion of carbonic acid and water-vapour is produced per candle-power. It also consumes a much smaller proportion of oxygen as compared with other gas-burners.

The employment of the electric light for libraries must soon be recognised as the most desirable form of illuminating. Mr. Greenhough gives some very useful data in comparing the two kinds of light. A much smaller proportion of heat is radiated from the electric light as compared with that radiated from gaslight. It is asserted by a scientific authority that "to produce an equal amount of light, coal-gas gives off about 100 times more heat than does the electric arc-lamp, and that in the process of combustion 94 per cent. of ordinary gas are transmitted into heat, while only 6 per cent. are available for the production of light. In his paper on the "Ventilation, Heating, and Lighting of Libraries," the author gives the results of the effects produced by the two systems of lighting in the news-room of the Reading Public Library (see plan 4). The experiments, according to him, clearly prove "that after the gas had been burning three hours (Sugg's governors, equal to 360 candles), the thermometer at 5ft. from the floor had risen 4°, and at 16ft. from the floor had risen 15°, although the temperature in the open air had not changed. When the arc-lamps of 2,400 candle-power were in operation, and after they had been lighted three hours the thermometer at 5ft. from the floor registered a fall of one degree, and showed no change at 16ft. from the floor, but the outside thermometer had fallen 2·5."

The Reading Library affords a fair example of electric lighting. The local electric lighting company is paid by contract £80 per annum for supplying the current to eight arc lamps in the library and reading-rooms, including providing the carbons and keeping the lamps in order. The prices are certainly low. The arc lamps are of 1,200 candle-power each, but 60 per cent. of the light is absorbed by thick opal globes necessary to protect the eye and to diffuse the light. The total illuminating power is therefore equal to about 4,320 candles. Mr. Greenhough says if 100 8-candle power glow-lamps had been adopted, the expense of lighting would not only have been nearly double that for arc lamps, but the total lighting power would have only been equal to about 800 candles. The cost for gas last year was £79, while the total lighting power was equal to some 1,360 candles. The result speaks for itself. We recommend the reader to peruse Mr. Greenhough's useful paper on the question of lighting and heating.

To remove the heated air near the ceiling is one of the most important objects to accomplish, and this can be accomplished by a well-considered distribution of outlets in the ceiling above the open gas-burners, so that their heat may assist the ascensional current to carry off the products of combustion. Such means of inducing up-draught in the outlet tubes may be used, as those afforded by Boyle and Son's air-pump ventilator and Kershaw's pneumatic ventilator. For fresh-air admission the vertical tube, or Tobin system, is recommended. These tubes, Mr. Greenhough says, should be carried to about 6 or 7ft. from the floor in height, and be properly distributed and apportioned. He says "an excellent way to place the tubes in a reading-room is, when practicable, in a continuous length round the room against the wall, and with a projection of about 2in., thus forming a kind of dado; an advantage is gained by placing the tubes against an outer wall, as by so doing the fresh air may be brought directly into the tubes through an opening in the wall." Lids or valves, to regulate the amount of fresh air admitted, are necessary at the top of the tubes.

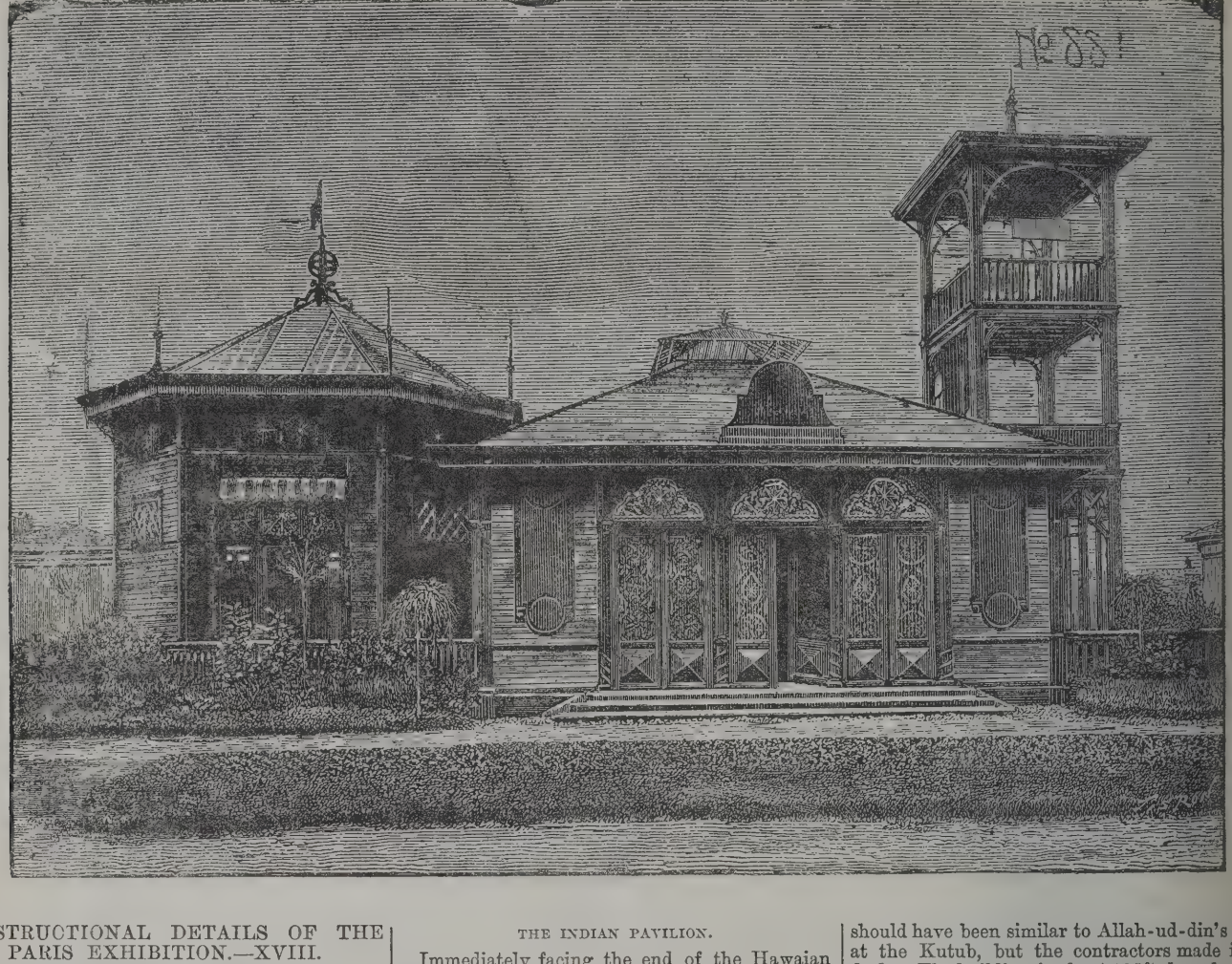
Of the various methods of warming, that by means of hot-water pipes is recommended. These may be distributed in coils or pipes, with valves for regulating the heated air admitted. A combination of warm air and hot water may be found more efficient in many libraries, and Grundy's apparatus offers a desirable mode of heating the fresh air admitted. Steam pipes are open to objection, and boilers are apt to explode; ordinary fire-grates give only a partial heat, not adapted for large reading- or news-rooms.

ARCHITECTURAL STUDIES IN FRANCE.

[WITH ILLUSTRATIONS.]

THE late Rev. J. L. Petit, M.A., F.S.A., was no mean authority on archæological and architectural subjects during the early days of the Gothic Revival, and much that is best in the practical work of that period was, at least to some extent, influenced for the better by his writings. Foremost among his books perhaps was the volume which he published in 1854 under the above title. His volume was considerably enhanced in value by the engravings furnished by the well-known artist, Professor Delamotte. We have now before us a new and revised edition brought out by Mr. Edward Bell, M.A., F.S.A.,* who has added some foot-notes and useful references, but the main portion of the work remains unaltered. The large and unwieldy form of the original has, however, given place to a handy and convenient book, suitable for ready reference, with the old lithographic illustrations reproduced to a reduced scale in *fac simile*. Mr. Petit's sketches were so exceedingly bold, not to say coarse, in style of drawing, that these studies of his have really lost none of their value in the present reproductions. The reissue of such a work as that before us is an incident of special interest to the lover of Mediæval antiquities, showing as it does a conviction that there still remains among us a large class of readers who value existing examples of Mediæval art, even though the resuscitation of the Gothic style, at least in its entirety, has for the present proved fallacious. Hope, Pugin, Carter, Rickman, Whewell, and Willis furnish honoured authorities in the school to which Petit belonged, and their works still constitute the backbone, so to speak, of our books of reference on the grammar of architecture in England during the middle ages. Sharpe, Scott, and Street developed its study, aided by such enthusiasts as Burges and E. W. Godwin, thus leaving, no doubt, much of the earlier work of revival a considerable way behind. The researches of these pioneers, who first systematised the study of Mediæval building, if sometimes crude to present ideas, had a distinct freshness and zeal about them which even now is exceedingly stimulating, and the manner particularly in which writers like Petit pursued their way, gives their opinions more than a passing interest, and, moreover, adds a considerable theoretic value to their utterances. The drawings in the book under notice show us in a fairly accurate manner several buildings which have since been restored out of all knowledge, or possibly been removed entirely, as in some cases, by the reckless innovations which have from time to time been committed under the plea of "improvements." Petit's book was not the chronicle of a single tour, but is to be taken rather as the outcome of many visits, generally made with a definite purpose in view. We do not propose here to follow the writer again through his very readable treatise, in which the student will find many a page worthy of verbatim quotation, for although Mr. Petit was not a practical architect, he was a critical and keen observer of no mean capacity, entirely in love with his subject of study, and actuated by a highly-artistic judgment, quite above and beyond the dry bones of mere antiquarian limitations, for, much as he reverenced the past, his hope lay—as a true student of a living art—in the possibilities of the future and its developments. In his preface, the author gives a list of books which he found useful. The editor adds two more; but he surely should have mentioned the Sharpe Memorial Volume, which so fully illustrates the domed churches of Charente, to say nothing of the volumes of sketches which have appeared since Petit wrote from the hands of Shaw, Nesfield, R. J. Johnson, Burges, and Galsworthy Davie. No doubt these are already familiar; but a footnote which includes Macgibbon's "Architecture of Provence and the Riviera" should bear some reference in the direction we have ventured to point out. By the courtesy of the publishers, we are enabled to give herewith a selection of some of the more characteristic illustrations in the book, the two central ones being from Mr. Petit's own sketches on the spot. Other illustrations in the volume are careful woodcuts, showing details and mouldings to elucidate the author's descriptions or general views engraved from his rough studies, which sometimes had, as he acknowledges, to be supplemented by the artistic imagination of the draughtsman employed to render them suitable for the engraver. Illustrations of the latter kind undoubtedly are not to be relied on beyond giving general impressions of the subjects to be represented. Taking the sketches in the order in which they are arranged on our sheet, we have first of all, in the top left-hand corner, a general view of St. Saturim, a little round-arched chapel, which forms a very curious relic of its kind dating from the 11th century. It is a perfect cross church of the transverse triapsal form, and has a central tower. The semicircular apses spring directly out of the tower, and internally have a semidomical roof. The whole width, taken at the transept, and including the thickness of the walls, is not above 14ft. It is not far from the once-beautiful abbey of St. Wandrille, near Caudebec. Bougy Church (the central study on our sheet) in Calvados, near Evrecy, has a little central spire turret like those to be met with in Gloucestershire and Wiltshire, such as Harscomb, Boxwell, and West Littleton. The next sketch is a view of the church at La Palud, in Charente, which, though dissimilar in outline, is in many respects very like Courcôme. It stands near the beautiful ruins of the Abbey of La Couronne, six or seven miles from Angoulême, on the Bordeaux-road. The spire has the usual "fir-apple" ornament upon it peculiar to this district, as at Roulet, Perigueux, &c. It belongs probably to the 12th century. The first of the lower three sketches represents the village church of Monts, near Tours, and not far from Montbazon. It has semicircular plain arches with a semicircular apse, having tolerably rich Romanesque work about it. The last sketch in this sheet illustrates Artannes Church, situated close to the last named. At its east end is attached a castellated mansion, apparently of the 15th century; but most of the church is earlier. The chancel is square-ended, with ribbed vaulting somewhat domical. The central tower is low, and covered with a wooden spire. It has a pair of round-headed windows on each face. The nave is much earlier than the tower, and internally is very interesting, with the quaint pulpit on the right of the chancel-arch. The chief illustration in the central lower position on our sheet shows St. Sernin, Toulouse, from the north-west. This is one of the largest and finest Romanesque churches of the South of France. It consists of a long nave with two aisles on each side, north and south transepts of great length, and two apsidal chapels to each transept looking eastward, a choir with polygonal apse, aisle, and radiating chapels. At the west end is a kind of transept about the depth of one bay of the nave, but not projecting beyond the walls of the external aisles. In the centre is a lofty octagonal tower tapering in five stages. The three lower ones are Romanesque, and the whole is constructed of brick covered with plaster. There are several other drawings of this church in the book besides this one. In parting with this new edition of an old friend, which we welcome, we may say in conclusion that the publishers have done their part well. The paper is good and so is the printing. The cover, too, is suitable, in quiet green, well adapted for the library, so far as a cloth-covered book of reference can be.

* Architectural Studies in France. By the Rev. J. L. Petit. New and revised edition by Edward Bell, M.A., F.S.A. London: George Bell and Sons. 1890.



CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—XVIII.

By Banister Fletcher, Jun., A.R.I.B.A.

PARAGUAY PAVILION.

THIS pavilion is an example of a building executed in wood and strengthened at the angles, &c., with iron. The cost was £2,000, and M. Moreau, the architect, had to design it so that it could be taken down and re-erected in Paraguay.

The plan is divided into three parts (No. 89), arranged side by side, and consist of a central one-story building, 32ft. by 32ft., and 26ft. high. On one side of this an octagonal one-story building, 28ft. across, and 30ft. high, and on the other a tower in three open stories, 10ft. by 10ft. by 48ft. high. See illustration (No. 88) above.

With the object of easy removal it has been designed in a great number of pieces, and consists of light iron framing weighing about three tons and filled in with wood panels. The ironwork is covered with pitch-pine wood on the exterior, so that the construction is not shown. The roof is covered with zinc.

THE GUATEMALA PAVILION

was erected by M. Gridaine, a French architect, and is only interesting as being a reproduction of a typical country house in Guatemala, and is of the châlet type, and, of course, in wood, two stories high.

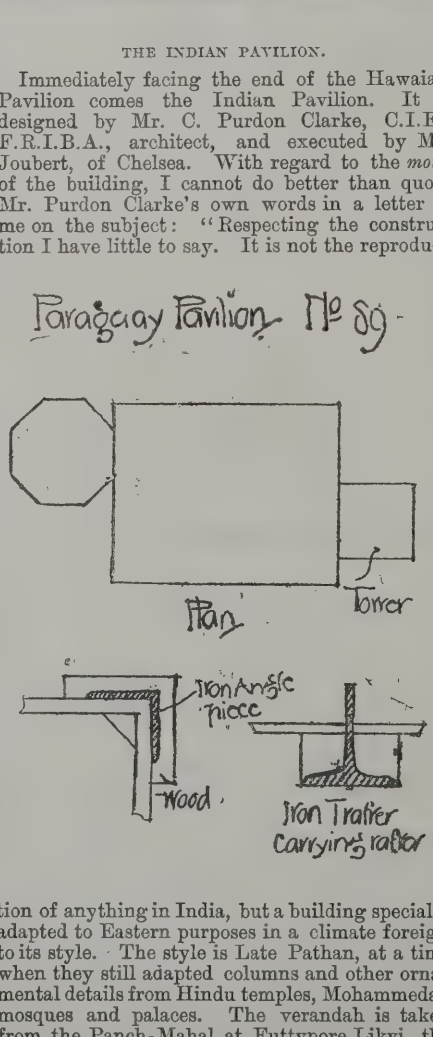
The elevation is considerably brightened about the central entrance by the importation of tiles into the decoration. It is covered with red tiles, and between the main wood uprights it is filled in with pitch-pine boarding. It covers a space of 5,400sq.ft.

THE HAWAII PAVILION

s built in the exposed pan-de-bois type, in which he wood framing shows, and filled in with brick-work. It is a rectangle in plan, and surrounded on three sides by a verandah, with thatch roofing carried on wooden columns. The filling-in between the wood framing is of bricks in patterns of various colours. The design is based on a modern Hawaian house. The building is covered with tiles, and the entrance has a large panel in terracotta over it. The side of the building, which has no verandah, is ornamented with panels in glazed terracotta. The lighting is side windows above the thatch roof to the verandahs.

THE INDIAN PAVILION.

Immediately facing the end of the Hawaian Pavilion comes the Indian Pavilion. It is designed by Mr. C. Purdon Clarke, C.I.E., F.R.I.B.A., architect, and executed by Mr. Joubert, of Chelsea. With regard to the *motif* of the building, I cannot do better than quote Mr. Purdon Clarke's own words in a letter to me on the subject: "Respecting the construction I have little to say. It is not the reproduction of anything in India, but a building specially adapted to Eastern purposes in a climate foreign to its style. The style is Late Pathan, at a time when they still adapted columns and other ornamental details from Hindu temples, Mohammedan mosques and palaces. The verandah is taken from the Panch-Mahal at Futtypore Likvi, the outer walls, principal side, and back entrance from several mosques at Ahmedabad, and the central hall from a portion of the mosque at the Kutub, Delhi, where Jain columns were used. The colour



should have been similar to Allah-ud-din's tom at the Kutub, but the contractors made it to dark. The building is about 185ft. long by 46f broad, and cost £2,800." Mr. Purdon Clark subsequently very kindly sent the attached plan elevation, and section, and also a perspective, an in reference to a question from me as to th precise name of the building, he very kindly ga the following explanation:—"The building h been called by various names, but as a temporar resting-place for traders or merchants in th East it would be called a Serai. In the Par Exhibition of 1878 I built a pavilion, and at th Colonial and Indian Exhibition a portion of palace with outer courtyard surrounded by th usual shops; but in the present case the buildin is between a covered bazaar and a karavan serai." The building is executed with woode framing and rough plaster covering, with dar red bands. The plan and distribution will b better understood from the plan, &c. The galler at the first floor to the octagonal dome is ap proached by a staircase at the side. The model for the columns and other parts have been take from the Indian Museum under Mr. Purdo Clarke's direction. The 20 shops are occupie by Indian exhibitors, and by Messrs. Liberty, Regent-street, London, who have done so muc to popularise Indian art and manufactures i England. It is one of the most satisfactory the temporary pavilions in the Exhibition, grea care having been taken in the modellings, & The three pavilions still left along this side ar those of China, Roumania, and Siam.

THE CHINESE PAVILION

is typical, with its three turrets and exterio decorations of sculptured and coloured woods.

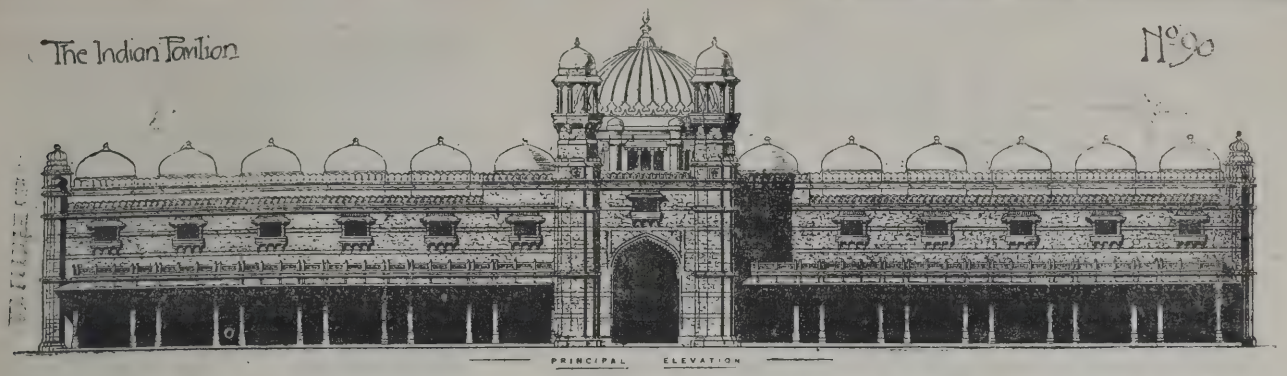
THE ROUMANIAN CHALET

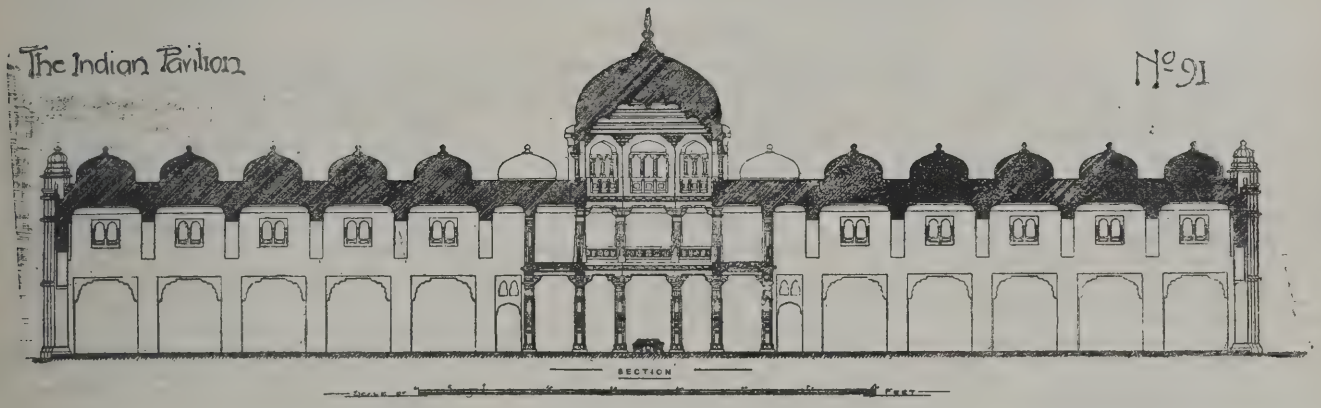
is a typical Roumanian country house, with tower and overhanging roof. It is built wit wood framing and plaster.

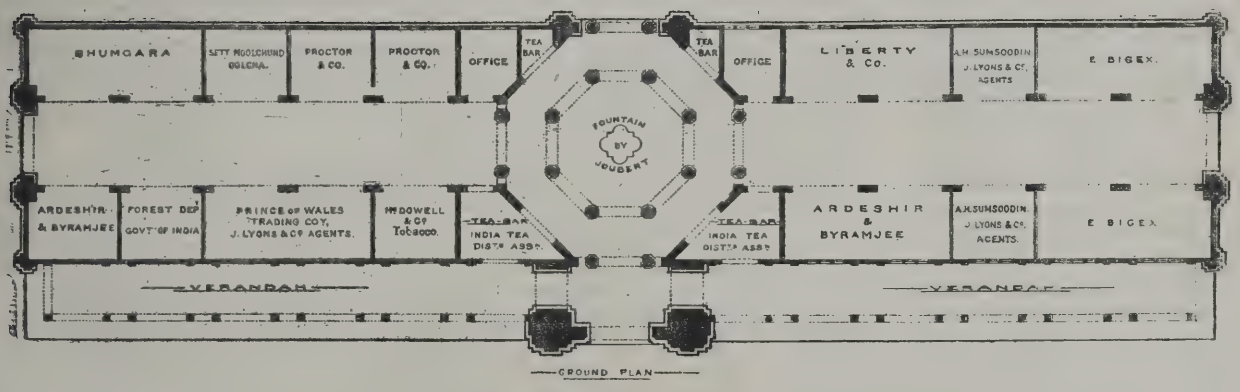
THE SIAM PAVILION

is a wooden construction, reproducing a moder Siamese building.

The façades of the "groupes divers" which abu on this side of the Avenue de Suffren, are som of them, interesting and characteristic; but I wi simply take one—the façade to the Greek sectio a small woodcut of which I give. The archite







is M. Lauffroy. The length is 115ft. by 39ft. high. On each side of the central entrance are two wings, and in the flat space between the base and cornice is painted on one side a view of the Acropolis at Athens, with the names of the most important towns in Ancient Greece (Athens, Corinth, Sparta, and Thebes); and on the other side of the entrance, of the manufacturing town of Lauvium, with the most important towns of Modern Greece painted above (Pireus, Syraceuse, Corfu, and Patras), thus connecting in an appropriate manner the contents of the Exposition.

THE MOROCCO VILLAGE

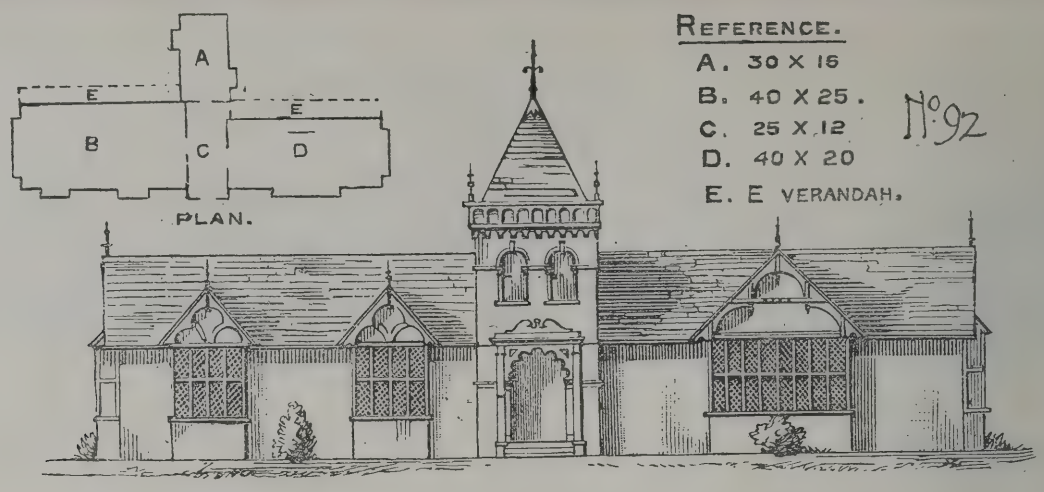
covers a space of 2,400sq.yds., with the Imperial Pavilion in the centre of the group. The different buildings composing this group are in the Moorish architecture of Spain, with their columns, pointed doorways, and horse-shoe arches. It is, of course, interesting as an example of this style.

THE RUE DU CAIRE,

running along up to the "Galerie des Machines," gives one an exceedingly good idea of an old Cairo street, with the one exception that it is not narrow enough. This is, however, a rather important item. A street of this kind gets half its picturesqueness from being narrow. Most of the doorways and projecting window-casements have been brought direct from Egypt, as also the lattice windows, which are such an important feature in Egyptian work; Monsieur le Baron Delort de Gleon, a French nobleman, being principally instrumental. In a great many respects, "La Rue du Caire" is more ancient in its size than are to be found at Cairo itself, from the fact that the greatest part of these get rebuilt in more modern styles, whereas this street in the Paris Exhibition is all ancient. The minaret, however, is not real, but is a copy of the minaret Kaid-bey. The ornamentation to the walls in the shape of plaques, crocodiles, &c., and old faïence decorations have been brought from Cairo. The *tout ensemble* is most effective, and is one of the most picturesque "installations" at the Exposition. Wending our way back to the Eiffel Tower, and commencing our inspection of the buildings on the east of that structure, and afterwards proceeding to the Avenue Bourdonnais, we can see at once that the structures on this side of the Champ de Mars are not nearly so instructive as on the other. The building of the Manufactures de l'Etat, by the Eiffel Tower, is a plain, ugly building of iron framing and brick filling. "Le Pavillon de la Société Eiffel" is composed of iron pilasters and brick-nog filling-in, and consists of one large room with a dome in the centre.

THE GAS PAVILION

was designed by M. Picq, architect also to the Chili Pavilion, and covers a space of about 510 square yards, and contains a basement, ground, and first floor. It will be seen from the engraving that it is Renaissance in style, and is constructed in pan-de-bois, or brick-nog walling, and faced with plaster. Above the first floor starts the glass dome at one of the angles of the building, and there is an open verandah over the other part. The building is erected by an association of gas manufacturers to enlighten the public on the value of gas as an illuminant properly applied, and as to the various uses to which it may be put for heating, warming, and cooking, and



also as a motive power. There is a retrospective exhibition in connection with gas on the ground floor. The gallery of gas-motors in the basement is fitted up with the best-known motors (including an Otto) in working order, raising the water to different stages of the house, and working the lift. This room is lighted by albocarbon lights. The kitchen is furnished completely with gas-kitchener, &c., and lighted by ventilated Wenham lamps. The Salle d'Exposition d'Appareils contains the different kinds of gas-lamps, hot-water heaters, and gas-heating apparatus. The ground and first floor are furnished in the same way with every speciality for a private house, the different rooms being fitted up for their respective uses—*e.g.*, a library, smoking-room, and reception-room. The first floor contains a salon, bedroom, bathrooms, workroom, billiard-room, and salle à manger. The whole is interesting as an endeavour to show how, with suitable surroundings, gas may be applied to almost anything with advantage.

THE BRITISH COMMISSION BUILDING

has been erected by Mr. T. C. Humphreys, of Knightsbridge, London, and is built of corrugated iron and thatch roofing. The diagram above shows the plan, &c. There is nothing to be remarked in its construction.

THE SOCIETY OF ARCHITECTS.

THE Council of the Society of Architects, in their annual report, just published, state that the past year has been one of steady progress. During the session three honorary members and forty-four members have been added to the society, while one other, who had previously been removed under Rule 36, was re-admitted. Four deaths have occurred, and there have been seventeen retirements from various causes, leaving a nett increase of twenty-seven, or more than double that of the previous session. The number on the rolls is now—Honorary members, 4; ordinary members, 396; associates, 10, making a total of 410; while the calendar for 1889 showed 2, 375, and 12 in the respective classes. Reference is made in the report to the excursion to South Wales held in August of last year. At the ordinary meetings of the society, held at St. James's Hall, Piccadilly, papers were read by the President (Mr. R. Walker) and Messrs. G. E. Terry, A. W. Rimington, A. Fisher, E. P. Allam, Albert Goodman, H. R. Gough, G. A. T. Middleton, C. E. Gritton, and E. Tidman. The finances are in a satisfactory condition, as a balance of £39 8s. 5d. can now be shown, instead of a deficit of £14 4s. 11d., which had to be declared last year. The report adds: "Several members have sought and obtained advice from the Council when difficult matters in connection with their practice have arisen. Communications of this character are always considered as confidential, and the Council are at all times willing to assist members in this way when it is in their power to do so. The Council greatly regret that the second reading of the Architects' Registration Bill has not yet been reached. Although they have no official connection with the Bill Committee, they yet are anxious that the Bill should speedily become law, and they would urge the members, individually, to use every effort in their power to bring about this most desirable end." The inaugural meeting for the next session will take place on Tuesday week, Nov. 11th, when an address will be delivered by Mr. Robert Walker, of Cork, the President.

THE TURNERS' COMPANY PRIZE COMPETITION.

THE annual exhibition of specimens of hand-turning, held by the Worshipful Company of Turners at the Mansion House, is scarcely so varied as on former occasions. The three sections of exhibits include pottery, glass, and metal, and we confine our notice to the two former as being the most important. In pottery, under Class A, for pottery thrown on the wheel in one piece without joints, the first prize, the Freedom of the Company and £5, is awarded to A. Bartlett, of Lambeth, for a pair of vases cleverly executed and of ordinary shape. William Askew, Upper Kennington-lane, obtains the second prize, bronze medal and £3, for a rather heavy vase, which for beauty of design and symmetry does not compare with the third-prize work. The judges have awarded a certificate of merit and £3 to James Newman, of Burslem, for a pair of vases, differing in design, but both of pleasing proportions and shape. The fourth prize (second certificate of merit and £2) awarded to Mr. G. T. Scott, of Burslem, is given to a vase of rather clumsy outline and ill-proportioned base and neck. Two other prizes are given for works of this class. In Class B the silver medal is awarded to Horace Trigg, Smallthorn, Staffordshire, for a pair of cleanly turned vases of the artist's own design. The shape of these vases can hardly be called elegant: the body is clumsy. The second prize (bronze medal and £3) is given to William Askew, of Kennington-lane, for a large vase with handle of uniform shape, the upper part of body below the neck being flat. The third prize (1st certificate of merit and £3) to "Alhambra" is of original shape, and is thrown and shaved by the competitor. A vase of lumpy outline takes the fourth prize; R. R. Kilgower, Cobridge, Staffordshire, is the art workman. Class C, in which pieces of turned or shaved pottery ornamented by the runner or other hand tool only, are exhibited, with the permission to introduce incised work and coloured and glazed ware, is not a numerous class. Rupert Steel, of Shelton, Hanley, receives the silver medal, the second prize (bronze medal and £3) being given to Mr. Watson, of Lambeth Pottery, for a pair of elegant fluted vases, one of Etruscan or Greek shape, with inlaid fret round the upper edge of body of vase; the other is a ewer shown for fluted handle and body, and also of elegant design. F. Hancock, Burslem, and H. Ford, of the same town, receive 3rd prizes. Two sage-green and white vases on pedestals, the body ornamented with horizontal grooves and dental enrichment in the two colours, takes the 5th prize. The apprentices' works include a few creditable performances. F. Watkin, Burslem, takes the 1st prize (£2) for a flower-pot and vase of nice shape; and Joseph Aldis, Vauxhall, the first prize in Class B for a vase of good outline. The base of the second prize vase is too small.

In classes B and C, the judges are satisfied with the progress made.

The stone specimens include a few clever examples of design and workmanship, and various substances of a mineral character, such as porphyry, granite, jasper, agate, serpentine, fluor spar, &c. The first prize (silver medal and freedom of the Company), is won by Alfred Job Greatorex, Matlock, for a fluor-spar tazza, a material harder than Blue John or serpentine, and containing iron pyrites, which had to be cut out of bowl with special tools. The spar is of rare quality. The second prize is won by Charles Stevens, Penzance, for a handsomely hand-turned tazza vase in Lizard serpentine. The design is novel and well proportioned, and the base composed of four dolphins, cut out of one piece. In all eight prizes have been awarded in this material. The judges speak in commendation of the merit and treatment of a very brittle material, and the graceful proportions of the fluor-spar vase, and the equality of two serpentine jars, and praise the tazza for the turning and the sharpness of the mouldings.

In the glass we may mention, more particularly in class C, the first prize, work of Edward J. Hillebauer, of Whitefriars-street, consisting of a claret-jug, engraved and de signed by the artist, a young workman; and the pair of decanters which take the second prize, the work of Adolph. Pallme, Farringdon-road.

SHADOWS.—VI.

WE will continue to study the system of shadows for curved surfaces. We have to find the shadow of the spherically headed niche, Fig. 21. Draw the horizontal line A X, and then divide the circumference of the head into a certain number of equal parts; say eight parts, A B C D E F, &c., marking off the corresponding points on the plan at *a b c d e*, &c. Next draw the shadow lines at 45° from each of these points in both plan and elevation. The projection of the points *a b c* in the plan, will give us in the elevation the points A B C, the shadows of A B C. These points A B C being below the centre line A X of the niche, will be the true shadows of A B C. But in the case of the points D E G, &c., the shadows obtained in this manner would not be correct, because instead of being thrown against a vertical plane, they are thrown against the curved surface of the head of the niche, this curved surface advancing in proportion to the amount of the rise of the curve.

In order to find the true shadows of these points, we have to use the following method: the shadow of the point F, if the curve of the vault did not advance in rising, would be at K. In order to find the true shadow of F we must shorten the shadow line in proportion to the distance which the curve of the vault advances. To do this—from the point K we draw the horizontal line K 1, and from the point 1 let fall the vertical 1 1. The distance X 1 is equal to the distance of the advancement of the curve of the vault at the height of the point K. On the plan mark off x 1 equal to the distance X 1, and with the centre e describe the curve 1 k, cutting the line $f f$ at the point k; by projecting this point to the elevation we obtain the true shadow point of F.

For the shadow of point E we proceed in the same manner. From the point M draw the horizontal M 2, and let fall the vertical 2 2. Mark off on the plan a distance x 2 equal to X 2,

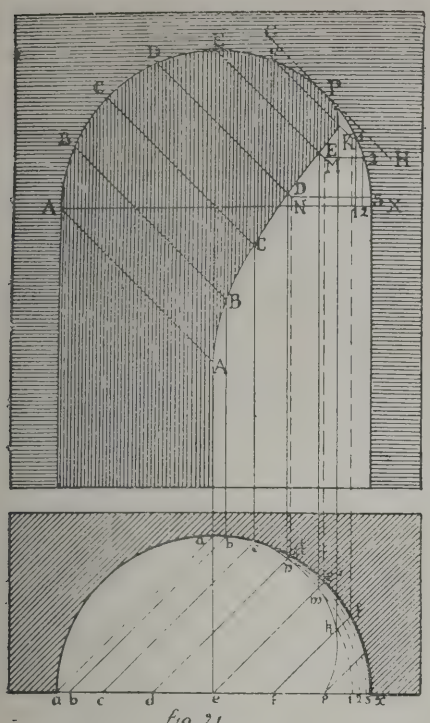


fig 21

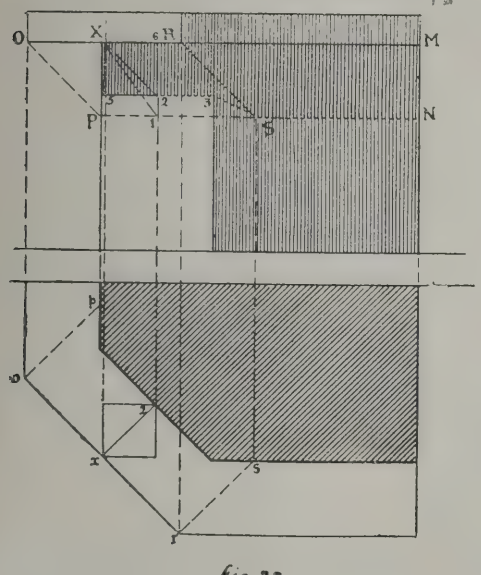
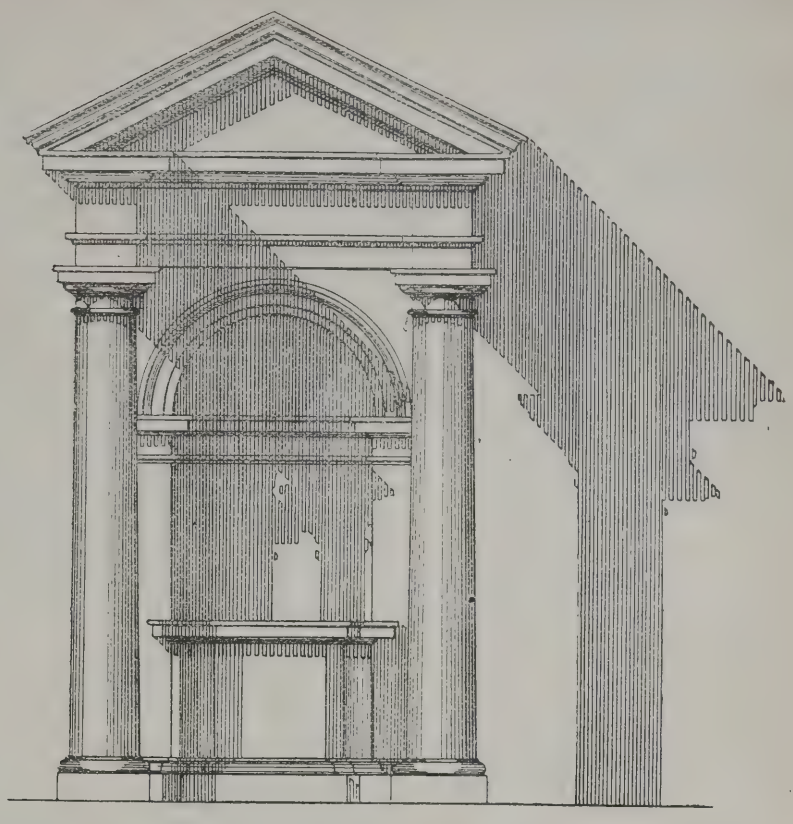


fig 22.



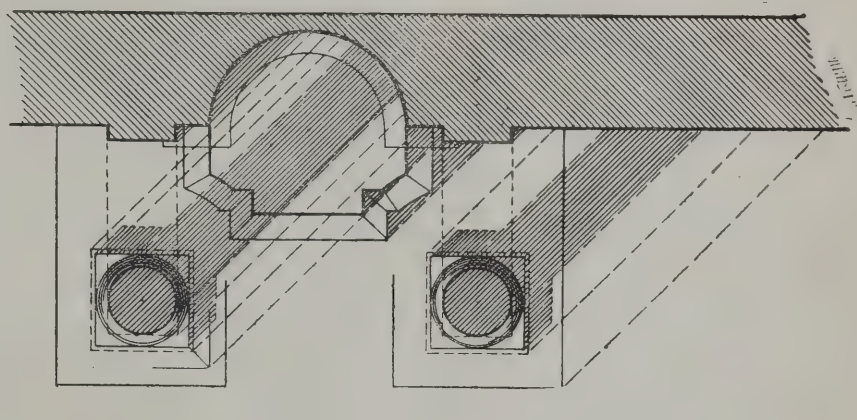


fig 23

and describe the curve 2 *m*, cutting the line *e e* at *m*; the projection of this point to the elevation will give us E—the true shadow of the point E. In the same manner we obtain the point D—the true shadow of D. The curve drawn through all these points A B C D E F P will be the shadow of the niche. The rays of light striking directly at the tangent point P, all the points P F E, &c., will cast a shadow, the points P X being in the light. The tangent point P is the commencement of the lighted portion, therefore the curve containing the shadow will start from point P. Of course the greater the number of points taken on the circumference of the niche, the greater will be the exactitude of the shadow obtained. This system of shadows applies to the interior of vaults, domes, &c. A little observation will at once make clear any deviation from the ordinary rules that may be necessary.

In Fig. 22 we have a block with one of its angles cut off at 45°, and crowned by a simple projecting cornice. We have to find the shadow thrown by the projecting cornice against the sides of the block, and more especially the shadow thrown by and against the plane at the angle. At first it would seem that the shadow should follow the straight line P S N, but this would be an error. The shadow of the portion R M of the cornice is, after what we have seen in preceding examples, easily found. The shadow line at 45° from the point O cuts the side of the block at P; draw the horizontal line P S N. The shadow line from point R meets P S N at S, the projection of *s* at S. S N is the shadow of R M. The shadow of the remaining portion O R of the cornice will be thrown partly on the angle plane, and partly on the front plane of the block.

We know that the rays of light are directly parallel to the diagonal of a cube—that is, at 45° to both the horizontal and vertical planes. Let us imagine a cube placed in the middle of the angle plane, as at *x* 2 on plan, and X 5 2 6 in elevation, the diagonal will be *x* 2 and X 2. We see, therefore, that the shadow of *x* X must follow the direction of *x* 2 and X 2; the point 2 will be the extremity of the shadow of X, and the horizontal 5 2 3 will represent the shadow of O R on the angle plane. X 1 could not be the shadow line of X, for the figure in the elevation would no longer be a cube, and X 1 would not be the diagonal of a cube, and therefore not at 45° to the horizontal and vertical planes. The line joining 3 S will be the remaining portion of the shadow of O R.

At Fig. 23 we have a niche and pedestal flanked by two columns supporting an entablature and pediment. The student would find it good practice to work out to a larger scale the shadows of the *ensemble*, carefully following the rules and variations given for the preceding examples.

ARTHUR VYE-PARMINTER.

Palais des Beaux Arts, Lille.

CHIPS.

The Tottenham School Board have instructed Mr. Charles Bell, architect, to prepare designs for the enlargement of the Stamford Hill Schools for 500 children.

A new U. P. church was opened at Chapelknowe, Gretna Green, on Thursday week. The new building is built of stone, accommodates over 200 persons, and has a lofty open roof. Mr. Geo. Dale Oliver, of Carlisle, is the architect.

The tower of Chesham Church, Bucks, has just been enriched by having a new set of Cambridge quarter-chimes fitted to the clock, and also a tune-playing carillon, fixed at the same time. John Smith and Sons, Midland Clock Works, Derby, were the makers.

On Saturday the chairman of the South Stockton local board laid the foundation-stone of new public buildings for that town. The site is close to the railway station, and on the site of an old Wesleyan Chapel. Mr. J. M. Garry, of West Hartlepool, is the architect of the building, and Mr. W. C. Atkinson, of Stockton, the builder.

Messrs. Shelley and Co., of 55, Lionel-street, Birmingham, have obtained a three years' contract from H.M. War Office for supplying and fixing their patent "Unique" glazing in the Royal Arsenal and Dockyard, Woolwich; Royal Gunpowder Factory and Buildings at Quinton Hill, Waltham Abbey; Royal Small Arms Factory, Enfield Lock; and any other Government establishment in England.

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ILLUSTRATIONS.

CONTEMPORARY BRITISH SURVEYORS.—COLOGNE CATHEDRAL: DETAIL OF WESTERN SPIRES.—SAUCHIEBURN, STIRLINGSHIRE, N.B. — TONGE HALL, MIDDLETON, LANCASHIRE. — NEW CO-OPERATIVE STORES, ANTWERP. —SOME FRENCH SKETCHES.—ASHLEY HOUSE, SHAFTESBURY AVENUE.

Our Illustrations.

CONTEMPORARY BRITISH SURVEYORS.

(See description on p. 630.)

COLOGNE CATHEDRAL—DETAIL OF THE WESTERN SPIRES.

We gave a general view of this world-famed church in the Building News for Nov. 29th, 1889, together with a photograph of the finial, the last stone of which was laid by the late Emperor William of Germany on May 15th, 1880. We published with these illustrations a somewhat lengthy account of the building, so that to-day little remains to be said. The photograph given herewith represents the highly-elaborate detail of these really wonderful spires, enriched as they are with a perfect network of tracery rising out of a veritable forest of pinnacles, gables, and buttress finials. Their vast scale is emphasised by the figure of a man standing on one of the parapets, thus rendering the illustration for all practical purposes equal to a drawing to scale. The photograph is from one of a series for which the Photographic Society of Great Britain awarded their medal to Herr Anselm Schmitz, of Cologne.

SAUCHIEBURN, STIRLINGSHIRE, N.B.

This mansion is in course of erection on a fine site about four miles from Stirling, and, when completed, will be one of the largest in the country. The style adopted is a free treatment of Scottish Baronial. The chief external features are the keep tower, 90ft. high, crowned with a machicolated parapet with battlements and open bartizans, and a circular tower, 16½ft. in diam., which has a flat roof, and is surmounted with an open balustrade. The walls are lined internally with brick, an air-space being left between the outer stone wall and the brick lining. This arrangement renders the use of lath for plaster unnecessary, and will make the house impervious to rats or mice. The whole of the servants' offices, which are unusually large, are lined with Burmantofts glazed brick of different colours; the upper portion of the walls being white or ivory colour, with deeper toned dadoes and friezes. The house contains drawing-room, library, boudoir, dining-room, billiard-room, and smoking-room, along with a large number of bedrooms and dressing-rooms. There is also a commodious family suite, including, besides the ordinary accommodation, a modelling-room for Lady Maitland, a private secretary's room, a business-room, charter-room, and laboratory for Sir James. The drawing-room, library, and boudoir form an imposing suite of rooms, more than 70ft. long. The hall is two stories high, and there is also a picture gallery 50ft. long. The whole of the reception-rooms and many of the bedrooms have handsome beamed and panelled ceilings, and all the former rooms will be finished in hard woods. The stone used for the building is red sandstone, from Corncockle Quarry, Dumfriesshire. The accepted tenders amount to about £25,000. The contractors are Mr. John Souden, Edinburgh, mason-work; Messrs. J. and A. Main, Falkirk, carpenter-work; Mr. John Scott, St. Ninian's, Stirling, plumber-work; Mr. James Annan, Edinburgh, plaster-work; Messrs. W. Highet and Son, Ayr, slater-work. The clerk of works is Mr. James Hogg, and the architects Messrs. Sydney Mitchell and Wilson, 13, Young-street, Edinburgh. The plans have been carefully considered by Sir James Maitland, and the architects are carrying out his ideas and wishes. The result will be a singularly compact and comfortable house. It may be interesting to note that the house occupies the site of the Battlefield of Sauchieburn, and that the flagstaff erected on the spot where King Robert the Bruce stood during the Battle of Bannockburn is only a mile away, and in full view of the house. The park is one of the largest in Scotland, and contains much fine old timber; while the views from it are magnificent, including as they do Stirling Rock and Castle, the Abbey Craig, the Ochiel Hills, the Links o' Forth, and the mountains on the Highland Border.

TONGE HALL, MIDDLETON, LANCASHIRE.

Tonge Hall, near Middleton, county of Lancaster, according to county records, appears to have been built by one Christopher Tonge, born 1566, and died at Tonge Hall, 1601. His father was Richard, and his eldest son a Richard, the second son, Asheton. "R. T." appears on an old iron latch-plate on one of the barns, and in yellow stain in one of the leaded quarries of the windows, now upside down, and upon two lead spout-heads with a date 1703. In 1726 the house and the estate seem to have passed into other hands, and the date and the name of the man who became possessed of it are visible, scratched in one of the window panes. The two fronts illustrated show all that is left of interest. There are no indications now of what extent the house may have once been. There is no sign of any refined detail anywhere, story-posts and beams roughly shaped and chamfered with the adze form the finish. The filling-in to oak quatrefoil panels is but of plaster and reeds 3in. thick at the most. The most striking feature about the old house is the excessive repetition of the quatrefoil panel, and the prominence given to the oak pinning of the cusping to the framing. The pins have been left outstanding about an inch, and produce a curious effect as their shadows lengthen. As is so commonly the case with these houses in exposed situations, the south and west fronts have perished and been replaced in ordinary brickwork. The rest is in a most precarious condition, and has just been vacated by the tenant, for whom a new commonplace house is built. Possession of the old house has been acquired by Mr. William Asheton Tonge, who hopes, at least, to be able to save it from destruction. The house stands well on high ground in the midst of what was fine, rolling country, wood, and meadow. Now its fair lands are reduced to a few sour fields, farmed against heavy odds in the form of streams of black smoke drifting all day long from the factory chimneys in the immediate neighbourhood.

BUSINESS PREMISES AT ANTWERP FOR THE ANGLO-BELGIAN SUPPLY ASSOCIATION (LIMITED).

Our illustration shows a design prepared by Mr. H. Roumieu Gough, F.R.I.B.A., and his partner, Mr. P. M. Roberts, for co-operative stores to be erected on a commanding central corner site in Antwerp. The building will occupy an area of about 7,000ft., and will be carried out in red brickwork with granite basement, plinth, and pilasters, and Antwerp grey stone dressings. The floor will be of fireproof construction. The directors of the association, of which Lord Waterpark is chairman, believe that there is a good opening for the investment of English capital in this busy seaport and flourishing city, where at present nothing of the kind on any scale of importance has been attempted, although it is well known that many of the ships leaving the port of Antwerp are provisioned from London, and several of the inhabitants, both English and Belgian, are in the habit of sending orders to co-operative stores in London. The company contemplate opening branch establishments in other parts of Belgium. The design illustrated was lately submitted to the King of the Belgians by Mr. Gough, and it met with his Majesty's cordial approval.

SOME FRENCH SKETCHES.

(For description, see p. 603.)

ASHLEY HOUSE, SHAFTESBURY AVENUE.

This block of commercial buildings occupies a commanding site near New Oxford-street, and can be seen from a considerable distance in almost every direction. It stands next the French Protestant Church, and near Bloomsbury Chapel at the end of Shaftesbury Avenue. There are four floors devoted to residential flats, and the lower part is occupied by shops. The walls are of red brick, and the dressings are of stone, with granite pilasters below. The roofs are covered with slates. Mr. Charles Bell, F.R.I.B.A., acted as architect for Mr. Henry Bailey, who is the occupier of the site. Messrs. Atkins and Atkins are the agents.

SCHOOLS OF ART.

Royal Female School of Art.—The annual exhibition of drawings by students in this school of art has been held this week at 43, Queen-square. The National Gilchrist Scholarship of £50 for two years has been awarded to Miss R. C. Whiteside, of Sheffield. The competition for this scholarship consisted of eight sets of works sent from country schools only, and the award was made by Mr. E. J. Poynter, R.A. For the second year in the Gilchrist Scholarship competition the successful artist is Miss F. M. Hodges. In the life room Edith M. Ball has gained a national bronze medal and a national Queen's prize; and Queen's prizes have also been awarded to Edith Harwood, Sarah C. R. Horton, and Alice M. Langford. The national silver and bronze medals have been gained by Miss F. E. Giles and Miss H. E. Dunnell respectively for chalk drawings from the antique. Other national Queen's prizes have been allotted as follows:—Constance A. Coxeter, Helena M. Evans, Lucy Gee, Alice L. Lester, and Emily Weaver. The following is a list of students for whose work the various scholarships have been awarded:—Ida M. Kirkpatrick, Queen's Scholarship, value £60; Alice M. Langford, Clothworkers', value £30; Hariot E. Dunnell, Atkinson Scholarship, £25; Maud Keary, Brightwen Scholarship, £10; and Constance A. Coxeter, Katherine E. Cornish, and Edith M. Latzarus, each a subscribers' scholarship.

COMPETITION.

Camberwell Public Baths.—We are informed that (acting under the advice of their professional referee, Mr. Charles Barry, F.S.A.) the design of Messrs. Spalding and Cross, for public baths on the Camberwell-green site, has been selected by the Camberwell Baths Commissioners. The estimated cost of this building is about £24,000.

CHIPS.

At a general assembly of the Royal Society of British Artists, the following gentlemen were elected members of the Society:—John Fulwood, W. H. Llewellyn, J. A. Lomax, members; and E. Burne-Jones, A.R.A., and John Burr, honorary members.

The result of the soundings for the proposed Channel Bridge, which were taken by Messrs. Renaud and George Hersent in July and August, have been published in Paris. The route is found to be a little shorter than was expected and it is said to present every guarantee as regards solidity and stability. The depths are not quite so great as they were supposed to be. M. Renaud's examination has further shown that by going a little further north a perfectly straight route can be obtained with a better foundation and less depth of water. This route would be four kilomètres shorter, and would, therefore, considerably decrease the cost of construction.

The Government Institution hitherto known as the Normal School of Science and Royal School of Mines will in future be called the Royal College of Science, London.

Damage to the amount of £80,000 was done at Paris on Sunday by the destruction of the premises of the Wood Paving Company on the Quai Grenelle.



ARCHITECTURAL STUDIES IN FRANCE.



ASHLEY HOUSE, SHAFTESBURY AVENUE.—Mr. Charles Bell, F.R.I.B.A., *Architect.*

WAYSIDE NOTES.

EVERY well-meaning individual considers the subject of the housing of the working classes in much the same light as do the members of the London County Council, who, on Tuesday's meeting, spoke in favour of the adoption of the report of the Housing of the Working Classes Committee; but it is not everyone who will think that the proposals made in this report are above criticism. Far be it from me to throw cold water upon the scheme. After much trouble and discussion in past meetings of the Council, after much essay-writing and much public speaking, and after Parliamentary labours, the councillors have at last been able to turn their attention to the practical aspect of the question. The committee appointed for the special purpose have come forward with tangible projects, and a definite plan in view. Ill-conceived, therefore, would be any mere carpings. These I have no wish to make; though, at the same time, and while viewing with satisfaction the business-like manner in which the Council have commenced the discussions of the proposals of their Committee, it is evident, from the remarks of criticising members, that these proposals do not give anything like complete satisfaction. The cause of this, however, seems to be rather that the committee have not sufficiently disclosed their intentions to the council in general. Broad outlines have been given, instead of a complete and finished picture; consequently, councillors have filled up the voids from their imaginings, and expressed dissatisfaction with the result. Such, at least, appears to me to be the most natural explanation of much of the adverse criticism evidenced at Tuesday's meeting.

That there should be some criticism of a scheme that will be a mere introduction to future operations on an even more extensive scale, is by no means an unwholesome sign. The first operations of the Council in the poor-housing problem—its first essay to more humanely shelter the working classes—will naturally form a precedent for subsequent undertakings in the same direction. It is of importance, then, that no ill-advised principle be adopted at the outset. If there is any danger of this in the present case, it is referable to an indication on the part of the Housing of the Working Classes Committee to think lightly of the neglect and apathy shown in matters of this kind by local authorities, and to at once assume the rôle of the "willing horse." This is all very well in its way, and the motives prompting to such a spirit may be most honourable and commendable where private affairs are concerned. In public matters, however, it must be remembered that not to enforce observance of by-laws and regulations that will assist in effecting desired reforms, and to at once fall back on one's own resources, is to handle lightly the funds provided by the ratepayer. So far as I can make out from the report of the Council's meeting, and the remarks of speakers, a charge of this nature could be made if the policy proposed be pursued without some modification. If such be the case, one can hardly imagine the London ratepayer looking upon the doings of the Council with a favourable eye.

Whatever may be the first concrete accomplishment of the Council, whatever its nature and scope, and wheresoever it be located, it seems, to my way of thinking, of the utmost importance that no stone be left unturned, *as a prelude to this*, to compel local authorities and others, under old, new, or consolidated Acts, to carry out, to the very letter, every improvement for the benefit and welfare of the poor that may be their duty. Unless a step of this nature be taken by the Council the public will declaim against them, and not without reason, nor necessarily because folk are blind to the need of reforms. To neglect this compulsion of negligent authorities and others, will be not only to ill economise public funds, but to encourage further ignoring of by-laws and regulations. First, then, let the Committee for the Housing of the Working Classes assure the Council and the public that a rigorous enforcement of the law will be commenced and carried through to the bitter end; afterwards the schemes for the reconstruction of districts and the erection of new and extensive blocks may be brought forward. They will then be favourably received by most persons, and the Council will only have been acting in conformity with a common principle that teaches us to bring all possible forces and influences to bear on the accomplishment of any desired end.

No objections have been raised to the main principles guiding the proposals of the Committee, so far, at least, as regards those evidencing a desire to provide better accommodation. The objections refer to the scant information vouchsafed to members as to the £300,000 scheme for Bethnal Green, and to the possible neglect of powers to compel the action of local authorities, both of which are mentioned above. Remove, in a complete and thorough manner, these obstacles to faith on the part alike of councillors and public, and the good work will proceed. Even taking the Bethnal Green project, we can judge from the descriptions of the present miserable condition of the particular district concerned, how great would be the improvement—moral, social, and physical—were some reconstruction such as that proposed by the Committee carried through. If this, or some other like scheme, be successful, others will be taken up readily. If a failure, an obstacle to the solution of this pressing social question will be thrown in the way. Humanity would suffer for the blunder. How great, then, the need for caution, and how sincere should be the present desire to make the first essay in the right path.

On the 3rd (Monday) is Mr. Waterhouse's presidential address at the Institute. The event will be anticipated with much pleasure by that portion of the architectural world privileged to attend. Many are speculating as to the subject-matter of the address. A friend says he will not be surprised if it be touching the improvement of the metropolis. All I can say is, that it is sure to be as usual — genial, apropos, and prospective.

On the 11th day of November, in this year of biennial presidents, Mr. Robert Walker, of Cork, will address the members of the Society of Architects. I am no more inspired as to the nature of the discourse to be delivered in the St. James's Hall than I am as to that at "No. 9"; but this I do know — that Mr. Walker "holds" an audience as well as any president of any architectural society, past or present, and that if anything is likely to be neglected in the address it will not be the subject of the higher education of architects. I look forward with great pleasure to the 11th, and anticipate allusions to education, examination, and registration, lightened by all that is pleasant and topical, and viewed with warm-hearted Irish humour.

Mr. Leonard Stokes has discharged his duty to the Association, and very charmingly and ably, too, as I only expected. The A.A. may be now considered to be in full swing again, and after the 11th, the new session of Institute, Association, and Society, will mark the close of one more architectural big-gooseberry season. Is the A.A. going to emerge at the close of this session in its new garb? Mr. Stokes and his colleagues are certainly making headway, and I see much that indicates the truth of what I said last session, that the objections raised to the reformation scheme were born, not of principle, but of a dislike to see a drastic measure rushed through at quite the fag-end of a term. For my own part, I seem already to see the accomplishment, for weal or woe, of the feat of reconstitution. I doubt whether the lines ultimately adopted will bear much resemblance to those already laid down; but what will it matter that the letters are unlike so long as the spirit of the reform remains constant? In itself this latter is excellent, and as such I again wish it may pervade all well-intentioned members of the Association. Referring to a portion of the presidential address, it seems a pity that such things should be; but the fact remains that Mr. Stokes will win —I won't say *hearts*, but *converts* – should any remain unconverted—by an appeal to, or rather a considerate regard for, members' pockets. If the scheme can be carried out by merely raising the subscription of members that are to be, by all means let ours remain at ten-and-six; but if the reform is to be made at all, and if, to its complete realisation, an all-round raising of subscriptions is necessary, would it not be a pity to spoil the ship for a ha'porth of tar, so to speak? There may be considerable opposition, as in days past, to the proposal to double the amount of subscription, and I have no personal wish to pay a guinea where one half the sum will suffice; but this I do say—that, half-measures being futile, the education committee, if going forward, must do so boldly, and, in some senses, relentlessly: they must have a jolly good try for the guinea.

The New Grand Junction Railway, of which we have heard from time to time, now seems likely to became an accomplished fact. In the *Times* of the 29th, those interested in this project will find a full and complete account of the proposed new trunk line to the North, which, with the assistance of a railway map of England, should give a very clear idea of the scheme. Where's it going to end? is naturally one's first curious inquiry, and, according to the writer of the article, the terminus of the N. G. T. Ry. will be somewhere close to Lord's cricket ground. Within the next two or three weeks Parliamentary notices will be lodged for nearly 100 miles of new trunk line and for the new London terminus. When complete, one of the oldest of railway companies, erstwhile known as the Manchester, Sheffield, and Lincolnshire Railway, will be able to drop its old title in favour of the new and more improving designation, while travellers to the North will have yet another route over and above those already offered.

GOTH.

CHIPS.

A large clock has just been erected in the parish church of Ilsington, South Devon. It is fitted with all the latest improvements. It shows time on three dials, each 6ft. across. Messrs. John Smith and Sons, Midland Clock Works, Derby, have carried out the work.

Mr. Charles Bell, F.R.I.B.A., was the architect for the wings to the Printers' Almshouses in 1870, and also for the completion of them this year, a rather rare thing for the same architect to be retained after an interval of 20 years. The builder is Mr. Mills, of Blackfriars. Mr. Chas. Bell is now restoring the old school at Steeple Bempstead, Essex, erected in 1590, every feature being retained, and all the materials, which are sound. The bricks are 2in., purpose-made. The contractor is Mr. Humphreys, of the same place.

The important improvements to Weymouth Harbour have now been completed. An amount of about £40,000 has been expended, under the directions of Mr. W. Barlow-Morgan, A.M.I.C.E., and the result is said to be most satisfactory as regards the G.W.R. Channel service. The contract was taken by Mr. H. I. Sanders, of Southampton, some years since. The work throughout has been attended with very great difficulty, in consequence of the shingly nature of the soil.

Mr. George Siddall, senior draughtsman in the railway works at Crewe, met his death one day last week by being knocked down and run over as he was crossing the line. Mr. Siddall was well known in Rotherham, where he served his articles with the late Mr. Blackmore, architect, at the same time as did Mr. R. J. Mitchell-Withers.

On Saturday Sir John Stirling-Maxwell of Pollok formally opened the Maxwell Park and laid the memorial stone of the new Burgh Buildings in Pollokshields. The park, which is the gift of Sir John Stirling-Maxwell, and is situated in Glencairn Drive, extends to twenty acres, and has been laid out by the commissioners.

The memorial window presented by Mr. R. B. M. Lingard-Monk, of Fulshaw Hall, Wilmslow, to the series of stained-glass windows which have been promised for the clerestory in the nave of Manchester Cathedral, was completed on Saturday. This is the third stained-glass window in the north clerestory, and contains five panels, representing Aaron as High Priest offering sacrifice; the remaining three windows, which are now plain, have been promised, and will be proceeded with in due course.

The Master Cutler laid on Friday the corner stone for the new rooms which are being built in connection with Petre-street Primitive Methodist Sunday Schools, Sheffield. The cost of the extension will be £450. Mr. C. J. Innocent is the architect, and the work is being carried out by Messrs. Longden and Sons, all of Sheffield.

A Jubilee memorial to Daguerre, the inventor of photography, has been placed on the wall of the National Museum at Washington. The design, by J. Scott Hartley, of New York, consists of a granite base and globe, together standing 16ft. high, with a female figure in bronze of heroic size, represented as placing a wreath on a medallion bust of Daguerre.

A new organ (built by Messrs. Abbott and Smith, of Leeds) has been presented to the parish church, Epworth. New choir stalls have also been placed in the chancel.

"BUILDING NEWS" DESIGNING CLUB.

AWARD OF PRIZES 1889-90.

THE following are the results of the BUILDING NEWS Designing Club Competitions for the past session based upon the synopsis of the several contests given below:—

1st prize of £10 10s., "Wallaby" (Mr. R. S. Dods, 11, Grange-terrace, Edinburgh).

2nd prize of £5 5s., "Fiddler" (Mr. Lancelot Fedden, 19, Avonmore-road, West Kensington, W.)

3rd prize of £3 3s., "North Star" (Mr. T. H. Dean, 4, Grosvenor-square, Brooklands, near Manchester).

Hon. mention, "Red Rover" (Mr. T. A. Cook Parkbery, Talbot-road, Axton, Birkenhead, Liverpool).

The following members are commended for their work:—"Skull and Cross Bones" (Mr. C. E. Hutchinson, Sunderland), and "Tyne" (Mr. H. C. Creighton, Newcastle-on-Tyne).

ANALYSIS OF SUBJECTS.

A.—A Doctor's House.—1, "Red Rover"; 2, "Myth"; 3, "North Star."

B.—A Study Chimneypiece.—1, "Wallaby"; 2, "Coaly Tyne."

C.—A Cemetery Chapel.—1, "Fiddler"; 2, "Red Rover"; 3, "Tyne."

D.—A Stable.—1, "Fiddler"; 2, "Skull and Crossbones"; 3, "North Star."

E.—A Cabmen's Shelter.—1, "North Star"; 2, "Wallaby"; 3, "Tyne."

F.—Row of Cottages.—1, "Fiddler"; 2, "Skull and Crossbones"; 3, "North Star."

G.—A Village Bank.—1, "Wallaby"; 2, "North Star"; 3, "Fiddler."

H.—A Village Parish Hall.—1, "Wallaby"; 2, "Red Rover"; 3, "Fiddler."

There is thus an exceedingly close contest between "Wallaby" and "Fiddler."

The following are the rules and conditions of competition for 1890-91, commencing from the present time:—

1. Drawings to be sent in 28 days after the publication of the list of subjects.

2. Usually two subjects will be given every month, from which a competitor may choose.

3. The drawings to be executed in firm black lines on white drawing-paper, in sheets of the absolute size of 22in. by 14in., with no washes or tinting in colour whatever. Outline to be the first consideration; but drawings may be slightly shaded with shadows executed wholly in line. Sectional parts to be shown in ruled "hatching" or blocked in. The scale to be used will be given with each subject.

4. Drawings to be forwarded unmounted, by post, care being taken to roll the short way of the drawing, as packages over 18in. long are not transmissible through the post.

5. On entering the class (which may be done at any time), each competitor is required to furnish his name and address, which must be written legibly on the back of each drawing, as a guarantee of good faith, the *nom de plume* the author intends to adopt being boldly marked on the front of each separate drawing.

6. Prizes of £10 10s., £5 5s., and £3 3s. will be awarded to the best series of designs, such series not to consist of less than six subjects. Our decision to be final.

7. Before awarding the prizes any contributor will be expected to furnish proof, if necessary, as to his age, and the time during which he has been engaged in professional pursuits, though no candidate need be strictly an architectural student.

8. We reserve the right of arranging the drawings for publication in any manner we deem necessary.

9. A critical notice of the designs sent in of each series will be given in an early issue following the receipt of the drawings.

FIRST LIST OF SUBJECTS.

A.—*A Small School of Art for a Village*, comprising at least four class-rooms or studios, one to be suited for life studies, and to have a small dressing-room for model attached. A master's room to be provided, and a small office. Studios 15ft. high. Site in a village street on frontage line to measure 75ft. in width and 30ft. deep; no entrance from rear. Front of site faces north. Style left to competitor. Scale, 8ft. to the inch. Sufficient elevations and plans to illustrate design, with small perspective sketch.

CONTEMPORARY BRITISH SURVEYORS.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

WE commence to-day a brief series of portraits which constitutes a slight departure from those already given. It will embrace some of the leading building surveyors who have been engaged on some of the chief works of the day. This series, naturally among architectural surveyors, commences with Mr. Thomas Miller Rickman, F.S.A., son of Thomas Rickman, F.S.A., author of "An Attempt to Discriminate the Styles of English Architecture." He was educated at King Edward's School and the Proprietary School, Birmingham, and articled to R. C. Hussey, F.S.A., in 1843 at Birmingham. He came with him to London in 1849, and remained some years as his managing clerk, devoting much of his time to the study of English architecture. In 1854 he became Associate of the R.I.B.A., and was then President of the Architectural Association. From about 1854 to 1860 Mr. Rickman contributed to the BUILDING NEWS. In 1856-7 he entered into practice at Stoke-upon-Trent in partnership with Mr. C. Lynam, and in 1858 commenced practice in London as an architect and surveyor; this practice soon drifted into that of a measuring surveyor. In 1860 he passed the Institute examination for the office of district surveyor, and, in 1865 was elected Fellow of the Society of Antiquarians. From 1870 to 1875 he was a representative of the Architectural Association on the Architectural Alliance, to which he was latterly the acting secretary. In 1871 Mr. Rickman became Associate of the Institution of Civil Engineers, and in 1873 was elected as "Conseiller Honoraire de la Société des Architectes du Departement du Nord." In 1873 he became Fellow of the Surveyors' Institution, in whose examinations he has assisted since their establishment in 1882, and he has sat on the Council since 1885. In 1886 Mr. Rickman was elected member of the Practice Standing Committee of the R.I.B.A., of which he has continued one of the hon. secs. He has also sat during the last session as member of the Council of the Institute, being one of the first Associates returned on that body. The portrait of Mr. Rickman is from the studio of Mr. Bassano, of Bond-street, W.

Mr. Elias Pitts Squarey, the President of the Surveyors' Institution, was born at Salisbury in the year 1823. He became the pupil of Mr. James Rawlence, F.S.I., then of Heale Farm, near Salisbury (now of Bulbridge, Wilton), his present partner, under whom he studied agriculture and surveying. At the age of eighteen he commenced farming on his own account, on some 500 to 600 acres, at Teffont, in Wiltshire, and after a few years he entered, in 1848, upon the occupation and management of a farm of 1,200 acres at Odstock, under the Earl of Radnor. His opinion and advice upon affairs of estate management soon began to be largely taken, and the occasions upon which the assistance of both himself and Mr. Rawlence were sought, in connection with valuations and other matters belonging to the profession of the land-agent and surveyor, became frequent, when Mr. Rawlence took his former pupil into partnership; and, as a result, the firm of Rawlence and Squarey was established at Salisbury in 1852. Their business grew rapidly, and in 1860 they opened their offices in Westminster. The principal business of the firm continues to be carried forward at the offices in Salisbury. But an opportunity for special usefulness for the London office soon arose in the creation, under special statutory powers, of the Land Loan and Enfranchisement Company. The purposes and position of the company are too well known to require any description in this place, and Mr. Squarey was one of the original directors. Amongst the positions which Mr. Squarey fills, it may also be mentioned that he has for many years been a director of the Wilts and Dorset Banking Company, and that he is one of Lord Wantage's active supporters on the Board of the Small Farm and Labourers' Land Company. He has frequently been called upon to give evidence before Royal Commissions and Committees of both Houses of Parliament. He has been appointed upon the Examining Boards of the Agricultural Colleges of Cirencester and Downton, and he is a member of the Surveyors' Club. When the movement began amongst surveyors for the establishment of the Surveyors' Institution, Mr. Squarey was one of those who founded the Institution. He was elected vice-president in 1880. He succeeded Mr. Beadel in the presidential chair. Mr. Squarey's contributions to the literature of his profession, and to agricultural literature in general, have not been inconsiderable. In addition to many contributions to the *Transactions* of the Surveyors' Institution, his pen has been in frequent requisition for the pages of the R.A.S.E. *Journal* and the *Journal* of the Bath and West of England Society. For the issue of the Royal Society's *Journal*, which was made in connection with the Paris Exhibition of 1878, Mr. Squarey was one of those invited to contribute articles. Mr. Squarey lives at "The Moot," at Downton, near Salisbury. The place is one of the most interesting in the country. At "The Moot" are to be seen, almost intact, the remains of an ancient amphitheatre, over which learned societies have debated until out of their discussion has grown the general opinion that it was a meeting-place of the old Saxon Witenagemote, of which our present Parliament is the lineal descendant, and learned societies have agreed upon the ancient uses of the place. Mr. Squarey's portrait is produced from a photograph by Mr. J. Owen, of Salisbury.

Mr. Henry Arthur Hunt, of the firm of Hunt and Steward, of Parliament-street, is a son of the late Sir Henry Arthur Hunt, C.B., the eminent surveyor, whose death we recorded in our pages last year. Mr. Hunt was born in the year 1836, and educated at Westminster School, which he left at an early age to enter the workshops of the late Mr. Thos. Cubitt, the celebrated builder, in order to learn the practical part of his intended profession. He afterwards was with Mr. Philip Hardwick, the architect, and subsequently in his father's office. Since 1859 he has been in practice with his partner, Mr. Herbert Steward. Mr. Hunt is surveyor to the Earl Cadogan, an appointment he has held for many years. He is also surveyor to the trustees of the Paddington estate, the Corporation of the Sons of the Clergy, the Dean and Chapter of Westminster, and the Royal Commissioners for the Exhibition of 1851. Mr. Hunt is chairman of the Westminster Improvement Commission, a position to which he was appointed by the First Commissioner of Works. Mr. Hunt takes an active interest in education. He is deputy chairman of the United Westminster Schools, having been a trustee since their institution under the Endowed Schools Act, and has been on the house committee of the Masonic Institution for Girls for some years. Mr. Hunt is a trustee and one of the founders with Mr. Herbert Praed, the Hon. Philip Stanhope, M.P., and Mr. Hodgson-Pratt, of the Grosvenor Club for Workmen, in Pimlico, one of the most successful institutions of the kind in London, numbering 700 or 800 members. He is an original member of the Surveyors' Institution, and an associate member of the Institution of Civil Engineers.

Mr. Herbert Thomas Steward was born in the year 1838, and was also educated at Westminster School. He was a pupil of the late Sir Henry Arthur Hunt for some seven years. Mr. Steward is an original member of the Surveyors' Institution, and is Surveyor to the Governing Body of Charterhouse School. The firm has carried on a large and various practice as surveyors during the last 30 years, and have been architects for many buildings in London and the country. They have been concerned in the estimates for many large building contracts—notably the Royal Courts of Justice, the Natural History Museum, South Kensington; the Home and Colonial Offices, Whitehall; the General Post Office West, St. Martin's-le-Grand; the northern extension of the Post Office in St. Martin's-le-Grand, the Houses of Parliament for the Cape of Good Hope, the Exhibition building of the year 1862, the Whitehall and St. Stephen's clubs, the National Safe Deposit Co. buildings, Queen Victoria-street; the National Provincial and Messrs. Childs' banks, the Society for Promoting Christian Knowledge buildings in Northumberland-avenue, and many other public and private buildings. They were extensively employed by various contractors in many of the fortifications that were erected under the Fortifications Acts in the Thames and the Medway, the Isle of Wight, Portsmouth, and Plymouth. Many large contracts in various parts of England for docks, railways, water, and gas works, and other engineering matters, have passed through their hands; and they have been extensively engaged for the South-Western and other railway companies. Mr. Hunt's portrait was taken by Messrs. Lock and Whitfield, of Regent-street;

and Mr. Steward's photograph is by Messrs. Elliott and Fry, of Baker-street, W.

Mr. Frederick Grainger Widnell, of the firm of Widnell and Trollope, was born in London in 1829. He was articled in 1844 to Mr. W. J. Gardiner, who was then in the office of Mr. Philip Hardwick, the architect, where Mr. Widnell served a portion of his pupilage. In 1851 Mr. Widnell was employed in measuring at the New Palace of Westminster, under Sir Charles Barry, on the termination of Messrs. Grissell and Peto's contract, and a year later, in conjunction with Mr. Trollope, established the well-known firm in which he is partner, their first business being the measurement of the further works at the New Palace of Westminster, undertaken by Mr. John Jay. During the Crimean War the firm was largely employed on the estimates and measurements of the important buildings erected at Woolwich Arsenal. From 1854 to 1880 Mr. Widnell's firm had in their hands the measurements for the several builders of the works in London under the Commissioners of Works and Public Buildings. From 1858 to 1866 the firm was extensively engaged upon the works carried out under Lord Palmerston's Fortification Loan at Dover, Portsmouth, Plymouth, and Milford Haven. In 1867 Mr. Widnell's partner (Mr. Trollope) became surveyor to Haileybury College. In 1873 Mr. Widnell was appointed surveyor to the Admiralty, and in this capacity has measured the various works (buildings, docks, and caissons) at Keyham, Devonport, Chatham, and Portsmouth, the "extension works" at the latter dockyard costing over 1¾ million of money. The firm have also got out the quantities for several of the most important lunatic asylums in the kingdom, and, in conjunction with Messrs. Hunt and Steward, prepared the quantities for the Royal Courts of Justice, undoubtedly the largest building in this country ever made the subject of one contract. Mr. Widnell, as representing the builders, measured the fitting up of St. Paul's Cathedral on the occasion of the Thanksgiving Service in 1872, and of Westminster Abbey for the Jubilee celebration in 1887. Few surveyors in this branch of practice have had a larger or more varied experience than Mr. Widnell, and no one is more justly honoured and esteemed by his professional brethren. Mr. Widnell is a Fellow of the Surveyors' Institute, and has on more than one occasion been specially associated with the Council of that body in deliberating on important matters of practice. The portrait given was produced by Mr. S. A. Walker, of Regent-street, W.

Mr. James Gandy, F.S.I., has had an extensive practice as an architectural surveyor, having, under the late George Edmund Street, R.A., been engaged in most parts of the United Kingdom on his numerous works, including the Royal Courts of Justice since the superstructure of that building was commenced. More recently he has been employed under Mr. Thos. E. Collcutt, the architect for the Imperial Institute of the United Kingdom, the Colonies, and India; also on several others of that gentleman's important works. Mr. Gandy has also, at various times, represented Mr. J. J. Stevenson, and other eminent architects, and has of late been engaged as umpire and otherwise on various arbitration matters connected with the building trade. Mr. T. Fall, of Baker-street, photographed Mr. Gandy for our series.

"KING JOHN'S PALACE."

A VERY large number of members of the Hampshire Field Club visited, on Thursday, October 23, the Norman house at the bottom of Blue Anchor-lane, Southampton, which has just been restored for Mr. W. F. G. Spranger, under the direction of Mr. T. K. Dymond. The *Hampshire Independent*, in reporting the proceedings, says that special interest attaches to this almost unique example of Norman Domestic architecture, which has of late been occupied as a coal-yard and stable. Under the supervision of Mr. Dymond, aided by Mr. E. Cooper Poole, architect, windows which had long been blocked up with stone were made once more to let in light, damaged portions were repaired, whilst inside the whitewash was cleaned off the beams of the roof and walls. The round-headed Norman doorway in Blue Anchor-lane has also been opened. There are three 2-light windows, with central shaft, from the carved capital of which spring the small semicircular arches. Inside, the windows open into very deep arched recesses, the rear arches of which possess a fine Norman moulding, fortunately preserved in the two windows facing the quay. A similar two-light window facing the lane probably lighted a short corridor which communicated between the great hall (now open to the sky) and the withdrawing room; the inner arch of this window is not moulded like the others. In removing the stones with which the windows were blocked up some of the ancient supports of the casements were found, and these have been utilised in the windows now put in, which are glazed in diamond pattern. The basement under the great hall was lighted by a beautiful little window, which was built up, but has now been opened. The roof of this interesting building, which is of chestnut, was pronounced by Mr. Dymond and other antiquaries to be the original roof, but some of the party were of opinion that it is of a later age. The walls are now covered with canvas, on which are suspended some copies of the famous Bayeux tapestry. There is not, as Mr. T. W. Shore said, another place in England where one can see so good a specimen of Norman Domestic building. It dates from the time of Henry I., and, though the tradition that it was King John's Palace is of modern origin, Mr. Shore thought it was borne out by history, and he quoted some documents in support of this. Thus in 1207 King John ordered the royal hall in Southampton to be repaired by the bailiffs of the town. And from the Itinerary of King John we learn that he visited Southampton on many different occasions. From the "Close Rolls of Henry III.," it appeared that Henry in 1222 addressed the bailiffs of Southampton, and ordered them "to repair our quay at Southampton, and to take care that our quay *in front of our house* suffers no harm." In 1224 the same bailiffs were ordered to repair the doors in other parts of the palace. It seemed to have remained a palace till in 1338 the French burnt and looted Southampton. After that date it was converted into a defensive place by the piers and arches outside, some of which come across the double Norman windows mentioned above.

THE SANITARY CONDITION OF LONDON BOARD SCHOOLS.

THE Works Committee of the London School Board presented a report to that body yesterday (Thursday) dealing with the sanitary condition of various schools in different districts, and the reports of the Finance Committee show that the necessary cost of placing these buildings in a sanitary condition will entail expenditure for which no estimate has been made during the current year. The first school dealt with is the Byron and Bright-street School, Bromley-by-Bow. This school was not built by the Board but is a "permanent transferred" school, the Board, therefore, not being responsible for the drainage, which, the architect (Mr. T. J. Bailey) reports, has frequently been troublesome. To divert the drains from running under the class-rooms, and to place the sanitation of the school in a satisfactory condition, would cost from £800 to £1,000. The large school in Bellenden-road, Peckham, is about ten years old. There were reports in the early part of the year that cases of diphtheria had occurred among the infants and girls. The report of the architect was to the effect that there was no ventilation to the drains, closets, or waste-pipes, and, so far as he could ascertain, the drains were not disconnected with the sewer; consequently the whole were charged with sewer gas. To remedy the evils he considered were existing would cost from £300 to £500. The Board did not adopt the report at the time, and the managers then pressed that the work should be carried out. Then the Board's medical officer was requested to examine and report on the school. Dr. W. R. Smith pointed out that the present sanitary arrangements are liable to injure the health of those attending the school, and he made recommendations that steps should be taken without delay to remedy the defects, and also to remove the teachers' offices to outside the school buildings. The committee, in recommending that the works shall be carried out, state that they could be planned with a view to additions which it is proposed to make to the school. The next report relates to Monteith-road School, Old Ford, the main drain of which, the assistant architect reported, it would be advisable to relay. The cost of this work would be £200. The Queen's Head-street School, Essex-road, Islington, was reported by the assistant architect to require the drainage for the girls' and infants' departments to be relaid, and the committee have recommended the work to be done. In respect to some of the defects in the schools of the Board, proceedings have been commenced against some of the builders. One builder has engaged, on condition that the action shall be stayed, to make good work to the extent of nearly £400 and to pay the Board's taxed costs of a reference, including the fees of witnesses, as well as to waive costs in an action which was stayed. In another case the builder has counterclaimed for libel.

THE LATE MR. R. A. LEDWARD.

WE regret to announce the death of that promising young sculptor, Mr. R. A. Ledward, who died on Tuesday morning last, at the early age of thirty-three. He was greatly respected by all his brother artists for his gentle and true artistic nature, and his loss will be deeply felt by all who knew him.

Mr. Ledward was born in Burslem, Staffordshire, in 1857, his early life being spent in the Potteries. In 1879 he gained a National Scholarship, and came to London, entering the schools at South Kensington. During his three years' studentship he gained, among many other awards, a gold medal for modelling; he was afterwards appointed a master of modelling in the schools. At the time of his death he was the modelling master at the Westminster and Blackheath Schools of Art. For the last eight years he has exhibited at the Royal Academy and other exhibitions. Among his ten known works may be mentioned "A Young Mother," which, for its tenderness of feeling and strong modelling, was undoubtedly one of the best works of the year. This work alone makes his early death a great loss to the art world. He also executed many excellent busts, among others that of Sir Philip Cunliffe Owen, Mr. W. Woodall, M.P., Mr. Broadhurst, M.P., and Mr. Daniel Grant, M.P. For the information of his numerous friends, we announce that the funeral will take place to-day (Friday) at Perrivale Church, near Ealing, at 12 o'clock.

BOOKS RECEIVED.

Outlines of Compensation Law, by WILLIAM ARCHBUTT POCOCK, of the Middle Temple, Barrister-at-Law, &c. (London: Frank P. Wilson, *Estates Gazette* Office), embodies in a popular and concise form the law of compensation as it is laid down under the Land Clauses Consolidation Act, 1845. Mr. Pocock explains the chief clauses of the act, and endeavours, by citing various cases, to show the principles upon which the making and resisting of claims are founded. Surveyors, engineers, and sometimes architects, are called upon to advise in cases of this sort, and it is very necessary for them to know the main features of the Act in question, and the decisions that have been made under it. The "Notice to Treat" required by sect. 18 is clearly laid down. The party served with such a notice ought to endeavour to come to an arrangement with the promoters. For this end particulars are required to be furnished them to enable them to ascertain the true value of lands, and offer a proper compensation. The notice to treat may not be followed by an agreement between the parties. It is not a contract; but it creates a relation between the company and the owners analogous to that of vendor and purchaser, the price not, however, being determined. When the price is settled, the transaction together becomes a contract, and can be enforced by an action for specific performance. All parties interested, every lessee and sub-lessee, is entitled to represent his own interest. Should negotiations fall through, or the owner fails to treat, Section 21 comes into force. If the claim does not exceed £50, or the claimant's interest is not greater than as tenant for a year, the compensation must be settled by two justices (Sec. 24). If it exceeds £50, the claimant can demand arbitration, or a jury. These and other circumstances are clearly defined; also the provisions for the appointment of arbitration and for jury. The principles of compensation are discussed. The primary one is that compensation shall be assessed "for the loss

which the owner sustains, the cost being the value of the thing to him, not its value to the persons acquiring it." When damage is caused to land, anything directly incurred is matter for compensation. Thus, damage by enforced removal by compulsory process is to be assessed. What amount of compensation is fair is a point for surveyors, but is dealt with in a general manner. Some useful suggestions are given under this head, and the book will be found a useful little guide to the surveyor and valuer engaged in compensation cases, or any land or house owner who wishes to know the practical effect of certain sections of the Act, such, for example, as those referring to arbitration (25-27), to jury (38-57), and to other matters.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Architectural Association. — Advanced Class of Construction and Practice.—At the opening meeting of this class at Conduit-street on Wednesday night, Mr. H. W. Burrows read a most able paper on "Building Stones," with special reference to their selection, durability, &c., and methods for testing the latter. The special visitor for the occasion was Mr. Hancock, the general manager of the Bath Stone Firms (Limited), who was accompanied by the London representative of the firms, Mr. Crawford, and who had kindly come specially from Bath to attend the meeting. After supplementing the information contained in Mr. Burrows's paper, he gave an exhaustive description of the new stone preservative, "Fluote," and exhibited several specimens of various Bath stones "fluoted" and "unfluoted," giving evidences from actual experiment of the effect of the liquid. A hearty vote of thanks was accorded him and the lecturer.

Glasgow Institute of Architects.—The twenty-second annual meeting of this institute was held last week, Mr. John Gordon, president, in the chair. The report stated that the number of members on the roll was 47, with 8 honorary members, making 55 in all. Reference was made to the fact that the Royal Scottish Academy had recently applied to the Privy Council for a revised charter; but the application in its original form, it was stated, had been opposed by many architects in Scotland, and the Institute had joined in the opposition. The affairs of the Institute continued in a satisfactory condition. According to the financial statement, the income for the year amounted to £98 15s. 6d., and the capital account now stood at £367 19s. 9d. The reports were adopted.

York Architectural Association. — The annual meeting of this association was held in the Church Institute on Friday evening, the president, Mr. W. G. Penty, F.R.I.B.A., in the chair. The following gentlemen were elected as members, viz.:—Mr. A. Creer, A.M.I.C.E., City Surveyor; Mr. F. Spencer Yates, A.M.I.C.E., Assistant Surveyor; Mr. F. Allcock, Mr. J. W. Windass, Mr. J. R. Wright, and Mr. Thomas Molding. The hon. sec., Mr. William Hepper, read the report of the eighth session of this association, which stated that the number of Fellows increased each year, the total number of members now on the books being 53. During the winter months five papers were read, and during the summer months three visits had been paid. There had been considerable demand for the books in the library. The treasurer's (Mr. R. Yeoman's) report showed that there remains a balance of about £23 in favour of the association, exclusive of the value of the library, upon which £7 had been expended during the session. The following gentlemen were appointed officers for the ensuing session:—President, Mr. Arthur Pollard; vice-presidents, Mr. C. H. Channon, of Malton, and Mr. Creer, the City Surveyor; hon. sec. and librarian, Mr. William Hepper; treasurer, Mr. R. N. Yeomans; committee, Mr. A. Burleigh, R. A. Parkin, J. U. Braithwaite, B. Spencer Yates, and E. Fellgate; *ex-officio* past presidents, Mr. W. G. Penty, and Mr. Wm. Hepper. The awards of prizes were announced as follows:—Class A, for junior students: One guinea in books, presented by Mr. Alderman McKay to Mr. Walter Bennett; Class B, for senior students: One-and-a-half guineas in books, presented by the Committee to Mr. Walter Bennett; Class C, the President's Prize, value two guineas in books, presented to Mr. E. Ridsdale Tate, for pen-and-ink sketches. The competition drawings were exhibited at the meeting.

Building Intelligence.

Bexley.—A new Congregational Church was opened on the 16th inst. The church is 68ft. by 32ft. 6in. internally, and 31ft. high to the centre of the ceiling, which is boarded and varnished. The platform end is apsidal in plan, with three rose windows in the walls above the platform filled with coloured leaded glass. All the windows also are filled with cathedral tinted leaded lights. The class-rooms, 10ft. by 12ft., open into the main room on one side by pointed arches, the spandrels of which are filled in with leaded lights. There is a four-light tracery window in front gable, and on one side a stone octagonal pinnacle is carried up to a height of 62ft., with the wrought-iron finial. The floors are of wood blocks on concrete. The lobbies are tiled. A ventilating trunk and Boyle's roof turret ventilator, surmounted by a cusped octagonal frame-work of wood and slated spire and iron finial, is provided for ventilation, in addition to hopper casements in many of the windows, and fresh air inlet flues. The exterior visible from the roads is faced with Kentish rag, with Doulting stone tracery and dressings. The roofs are slated, with red ridge tiles. The whole of the works have been executed from the designs of Mr. George Baines, Great Winchester-street, E.C., Mr. Vessey, of Bexley, acting as clerk of works. The contract of the building was let to Messrs. J. George Naylar and Son, of Rochester, for £2,384, and £119 for the upper part of the turret and spire. The seats, which are of pitch pine varnished, were made by Messrs. G. B. Hammer and Co., 370, Strand, at a cost of £101.

Bootle.—The ceremony of laying the memorial stone of the new church of St. Matthew, Stanley-road, Bootle, was performed on the 23rd inst. The ground-plan consists of nave with six arches, the two westernmost being narrower than the others; north and south aisles; chancel, raised four steps above nave, with chancel aisle on north side; organ-chamber, choir, and clergy vestries, with separate entrances on the south side. The principal entrance will have a small room over it, the staircase to which will be in a turret, with belfry above. The font will be under the large west window, and will be recessed, seats for church officers being arranged on either side. The organ-chamber will be lofty, and provision will be made for carrying the organ over the choir vestry. The following are the principal dimensions, viz:—Nave, 82ft. by 27ft. and 48ft. high; chancel, 34ft. 6in. by 23ft. 6in. and 46ft. high; chancel aisle, 25ft. by 11ft; total length of church, 116ft. 6in.; total width of church, 50ft. The church will be built entirely of brick, the exterior being faced with red Ruabon brick and terracotta. The columns of the nave arcade will be of Ruabon stone. The whole of the woodwork, except choir-stalls and furniture in chancel, will be of pitch pine. The flooring of the church will be wood blocks, except that at chancel and sacrarium, which will be tile mosaic. The style of architecture is Transition from Norman to Early English. Messrs. Aldridge and Dearson, of Liverpool, are the architects, and Mr. Thomas Urmson, of Liverpool, is the contractor.

Hongkong. — The Austen Arms Hotel is situated at the Peak, Hongkong, at an elevation of 1,400ft. above the sea, and the whole of the materials had to be transported from the sea level on the backs of Chinese coolies. The building is of red brick plastered, the pillars, capitals, and dressings being of granite. The roof is of red Chinese tiles, floors of verandahs and corridors of tesselated tiles. The whole of the ground-floor woodwork is of teak, the upper floors being of Singapore hardwood and China fir. The internal walls over the large public rooms are carried on iron columns and girders supplied by Messrs. H. Young and Co., of Pimlico. The accommodation comprises large dining hall, drawing, reading, smoking, and billiard rooms, private dining and sitting rooms, and about 60 bedrooms, each with bath-room. The whole of the work was constructed by Chinese contractors, and the cost will be about £25,000. The architects are Messrs. Danby, Leigh, and Orange, of Kongkong.

London.—The Bishop of Rochester on Saturday last dedicated a new mission church and hall at Canterbury-road, S.E., which has been erected by Corpus Christi College, Cambridge, in connection with their mission at Camberwell. The building consists of two floors, having a large hall, &c., on ground floor, and a church on first floor. The church is quite distinct from the lower part, and is approached by two wide stone staircases with direct access to the street. The building has fireproof floors throughout, and has cost nearly £5,000. The architect is Mr. Richard J. Lovell, A.R.I.B.A., of 46, Queen Victoria-street, E.C. — The same architect has also recently erected in the East-end a model "doss house." This contains accommodation for 45 lodgers, one floor being devoted to beds with screen between, and two floors having cubicles, which really form a distinct room for each lodger. On the ground floor is a large entrance hall, and stone staircase to each floor, with w.c.'s on each landing; common kitchen, with lockers for each lodger, deputy's room, and bar with pantry and stove. On the basement are the lavatories, with hot and cold supply to each basin, bath-rooms lined with white glazed bricks, and with hot and cold supply, deputy's bedroom and washing-room, with appliances for the lodgers to wash and dry their clothes. There is a yard with urinal, and the roof of the house is flat, serving as a recreation ground and for smoking in summer.

Manchester.—The Boys' Refuge in Strangeways was opened by Mr. H. M. Stanley on Tuesday. Designed in the Queen Anne Style, the structure occupies a site at the junction of Great Ducie-street and Francis-street, in front of the old Refuge buildings. The architects, Messrs. Maxwell and Tuke, aimed at producing a building which should have a substantial and domesticated character, with no suggestion of the workhouse type. Three separate "homes" are combined within its walls. In the largest of these, intended to house lads rescued from the streets, accommodation is provided here for 60 or 70 lads. On the right of the entrance is the reading-room, and on the left the games and visitors' rooms; while, overlooking the entrance, the superintendent's office commands a view of all the departments. The dining-room, four class-rooms, and the master's and matron's room are placed on the first floor. The second and third floors are divided into cubicles, and each floor is provided with bath-rooms and lavatories. A large covered gymnasium is provided at the rear of the building. In the centre of the block is the Brigade Boys' Home for between 40 and 50 boys. The basement of this division contains bath and lavatories, disinfecting closets, and work- and play-rooms. On the ground floor are the dining-room, the kitchen, the day-room, and a shop. The dormitories are on the higher floors. The remaining division of the block is intended to be used as a training home for intending emigrants to Canada, and accommodation is furnished for between 50 and 60 lads. In the basement are a workshop and smithy. Messrs. Robert Neill and Son are the contractors for the building, which has been erected at a cost considerably exceeding £10,000.

Sheffield.—The new school which has been erected by the Sheffield School Board at Abbeydale was opened on Monday. The building is two stories high, with gables and large windows, without unnecessary ornament. Coursed wallstone is used on all sides of the school, with ashlar dressings, and Westmoreland slates. Pitch pine is applied for all interior woodwork. Accommodation is provided on the ground floor for 420 boys, and on the upper floor for 420 girls, one class-room being fitted up for cookery instruction. It is intended to build an infant-school at the rear. Every separate class can enter and leave the school without crossing any other class. The cloak-rooms are placed so as to facilitate the separation of the classes. The contract for the building, including boundary walling, but exclusive of furniture, is £5,770. The contractors for the whole of the work are Messrs. Thomas Lowe and Sons of Burton. The architect is Mr. C. J. Innocent, F.R.I.B.A., F.S.I., of George-street, Sheffield, and Mr. J. Laidler has acted as clerk of the works.—St. John's Wesleyan Chapel, in Crookes Moor-road, of which the foundation stone was laid during the Sheffield Conference in July, 1889, was opened last week. The undertaking has involved an outlay of £7,000, in addition to the £4,000 previously expended on an adjoining building now to be used as a lecture hall and classrooms. The chapel is in the Gothic style. In addition to the chapel, which has sittings for 800 persons, there are two

large schoolrooms, one over the other, and connected by a staircase, around which are clustered on the different levels vestries, classrooms, and committee-rooms, a band-room, an infants' school, ladies' rooms, tea-room, cloak-room, and store-room. The various classrooms are connected with the main schoolroom by electric bells. The contractors were — masonry, Mr. James Fidler, Eckington; joinery, Messrs. W. Crookes and Son, Division-street; slating, Mr. W. J. Tune, Attercliffe-road; plastering, Messrs. Carter, Unwin, and Son; plumbing and gas-fitting, Mr. J. B. Corrie; glazing, Mr. H. Sutton, Birmingham; carving, Mr. F. Tory. The pulpit has been erected by Messrs. Johnson and Appleyards, from the architect's designs. Mr. C. J. Innocent, George-street, is the architect, and the clerk of works is Mr. George Malpas.

St. Mary's Church, Somers-town.—This church was re-opened by the Bishop of Marlborough on Saturday last, after having been closed three months for alterations. The building was originally erected in 1826 by the Brothers Inwood, architects of St. Pancras Church, and might fairly claim to be the ugliest church in London. A long notice of it appears in the *Gentleman's Magazine* of 1827, in which it is justly characterised as the worst specimen of "Carpenter's Gothic" ever erected. Enormous galleries, cast-iron shafts supporting a lath-and-plaster vault, wooden tracery of the baldest kind in the windows, and the grime of years were scarcely remedied by the crude attempts at ornament which had been bestowed upon the walls. Two years ago a small apse was added at the east end from the designs of Mr. Ewan Christian, F.S.A., and the work has now been carried some stages further. The galleries have been removed, and a stone band of tracery inserted at their level, so as to break the height of the two-light windows and accommodate the memorial glass formerly under the galleries. The whole of the roof and walls have been painted and partly decorated, and an attempt has been made to give a character to the slender pillars by inserting a nail-head moulding between the shafts, and substituting Early English caps of good type for the hideous "fungoid" growths of the original work. The organ has been removed to the north aisle, and new systems of heating and lighting introduced. The architect is Mr. Reginald Colebrooke Reade, M.A., of Torquay.

Truro.—At the annual meeting of the executive committee of Truro Cathedral, held last week, a discussion took place on the defects which have appeared in the Jura marble which composes the floor of the sanctuary, choir, and baptistery. It was thought that the whole of the floors ought to be examined and reported on by an experienced expert. Marble pavements required, it was stated, constant looking after, and attention at least once every two years. The defects were first noticed in March, 1888, only four months after the cathedral was opened, and since then attempts have been made to make it good. A considerable portion of the marble is loose. It was decided to write to Mr. Pearson, R.A., the architect, calling his attention to the state of the floors. This communication will come from the sub-committee, while the Archdeacon drafted another letter which comes from the executive committee, also to Mr. Pearson, calling his urgent attention to the matter, and pointing out how soon after the opening of the building the defects were perceived.

West Kirby.—Last week the corner stone of the new church of St. Andrew, West Kirby, Wirral Hundred, was laid. The cost of the church, when completed with chancel, organ chamber, tower, and spire, will be from £6,000 to £7,000, but at present the nave and aisles only are being built at a cost of about £4,000. The church will be in the style of the Early Perpendicular period, and is being erected in local redstone, the interior of the walls being faced in ashlar of the same material. The tracery of the windows is of simple character. The roofs will be open-timbered in pitch pine, with hammer-beam principals, supported by moulded shafts, rising from the bases of the arcade columns. The east end will be temporarily built up until the permanent chancel, central tower, and vestries are erected. Mr. W. H. Ford, of Birkenhead, is the contractor for the whole of the work, which is being carried out under the superintendence of the architects, Messrs. Douglas and Fordham, of Chester.

Engineering Notes.

Another Subway under the Mersey.—The proposal for forming a roadway beneath the Mersey between Liverpool and Birkenhead, for which an Act was obtained ten years ago, and which although not put into operation has been kept alive by extension Acts, is again being mooted. The present scheme is for a tunnel having an internal diameter of 24ft. 6in., with a width between curbs of 19ft., and a centre-line headway of 19ft. The mode of construction will be by a cast-iron shield in segments, hydraulic cement being forced through the joints during progress. Channels will lead into the culvert below, from which the drainage will be forced by the hydraulic power which actuates the lifts. The same power will provide ventilation by forcing a sufficient supply of fresh air suited to the requirements of the traffic. The roadway itself being practically level, it can be paved with wood, so that noiselessness and ease of transport for all classes of traffic will be secured. At each end of the tunnel there will be eight lifts, four for ingress and four for egress. Six of these lifts will be 45ft. long by 12ft. wide, and two will have a length of 60ft. with the same width. The last two are to provide for loads with exceptionally long overhang, such as rails, &c. The company which proposes to form the tunnel will have a capital of £700,000, and the working expenses are estimated at £10,000 a year.

A New Trunk Railway to the North.—In the course of the next two or three weeks the Parliamentary notices will be lodged for nearly 100 miles of new trunk line and a new London terminus for the Manchester, Sheffield, and Lincolnshire Railway, which, should it obtain the powers sought for, will blossom forth into the New Grand Junction Railway. The Bill proposes an extension of the M.S. and L. system from Nottingham (to which town a line, ten miles in length, is now being made by this company from Beighton Junction), viâ Leicester, Lutterworth, Rugby, Daventry, and Morton Pinckney to Quainton-road, six miles north-west of Aylesbury, and only 45 miles from London, where it will join existing or partially-built lines, providing a direct communication with the Metropolitan Railway system. The distance is thus 126 miles by the new road, which is itself 81 miles in length, between London and Nottingham, and 103 between London and Leicester. The Midland distances are respectively 124 and 99¼; but the new company will in each case have the better of the gradients. A new Metropolitan terminus is proposed to be constructed on the Eyre Estate, near Lord's Cricket Ground.

Douglas, Isle of Man.—The foundation stone of the "Eiffel" Tower and Suspension Bridge was laid with Masonic ceremony on the 16th inst. The works are to be carried out from designs by Mr. T. Floyd, C.E., of Westminster. The Bridge Company have arranged to widen Parade-street, and effect other improvements. The tower will consist of six floors. The basement floor will contain the vestibule, approach to the staircase, and lifts. The ground now covered by Queen's-place will be occupied by the hydraulic machinery, and the remainder of this floor is to be occupied by a hall 120ft. by 107ft., with a gallery all round, adapted for a circus or skating rink. The second floor will contain a large hall 140ft. by 107ft., and the measurements without the recesses will be 120ft. by 80ft., the floor being 43ft. 4in. in height. The size of the third floor is exactly similar to the first, and the height is 43ft. 4in., or 86ft. 8in. from the basement. The size of the fourth floor is 180ft. by 107ft. It comprises a concert hall 100ft. by 40ft., partially covered by a dome roof. There will be also on this floor an approach to the bridge, together with bazaars, shops, &c., including an outside gallery running all round and forming a promenade. The fifth floor is approached by a staircase in the concert-hall, and is 60ft. square. There will be a second lift provided to take persons up to the sixth floor. The fifth floor will be 172ft. from the basement. The sixth and last floor is 22ft. square, including a gallery, and is reached either by a lift from the fifth floor or by a staircase winding round the framework of the lift. The room is admirably adapted for an observatory. The floor is 330ft. above the basement, and will be higher than the top of Douglas Head. The floor is to be surmounted with a little turret containing an electric light, and on the top of this is to be a flagstaff. The height of the whole tower, to the top of the flagstaff from the basement, will be 375ft. The construction up to the third floor is to be formed of vertical columns of cast iron, planed to horizontal axes and bolted together. On these will rest wrought-iron girders, the carrying girders being 80ft. long and 8ft. deep. That to be used for the first floor is of the box type, in order to bear the strain of dancing. Hydraulic lifts are provided to each floor and gallery, visitors alighting on a landing 20ft. by 40ft. in area. The staircase, of stone, will be approached by a large vestibule 18ft. in width. The steps will be 14½in. in breadth and 5in. high, and will reach to the floor level of the bridge, 130ft. high.

Hodbarrow, Cumberland.—On the northern shore of the Duddon estuary, in the county of Cumberland, there has been steadily worked during the last 20 years or more a mine, producing a large quantity of rich red hematite iron. This mine is owned by the Hodbarrow Mining Company. The ore having been excavated as close to the sea margin as it has been possible to work without letting down the surface of the land and admitting the sea, thereby drowning the mine, the company have recently obtained a fresh lease, undertaking to construct a barrier to keep back the sea along the portion of the estuary in front of the mine, in order that they may win the ore from underneath some 25 acres of the sea-bed. To effect this object a substantial sea barrier has now been constructed, forming both a breakwater and a watertight dam. By means of this work the sea was about three months since successfully excluded from the area to be worked. The masonry and sluices for the discharge of rainfall and land soakage having now been completed, the final and memorial block was laid on Thursday in last week. The barrier is two-thirds of a mile in length, and for about one-half this length is 50ft. in height from foundations to parapet. At high water of high spring tides there is a depth of rather more than 20ft. against the seaward face of the work. The engineer of the work is Sir John Coode, and the contractors are Messrs. Lucas and Aird. The working of the iron ore over a further period of 25 years is anticipated, thus giving employment during that time to about 1,500 men.

CHIPS.

The new parish church of St. James, West-end, Southampton, was dedicated on Wednesday week. It is Early Perpendicular in style, and seats 460 persons. The facing materials are Otterbourne red bricks, with designs of Weldon stone externally and of Bath stone internally. The flooring of the nave and aisles is of wood blocks, while the chancel is paved with tiles. Sir A. W. Blomfield, A.R.A., was the architect, and Mr. Parmenter, of Southampton, the builder. The outlay has been £6,500.

The dissolution of partnership is announced as between A. H. Mackmurdo and E. Rathbone, under the style of Mackmurdo, Horne, and Rathbone, Liverpool, "architects, house decorators, and surveyors."

Miss Perowne, daughter of the Dean of Peterborough, writes, stating that since the reopening of that cathedral last week, five new stalls have been promised by different donors, raising the number from 12 to 19 out of the 40 stalls which Mr. J. L. Pearson, R.A., the architect to the Dean and Chapter, proposes to put up.

In the first division of the Court of Session, Edinburgh, on Tuesday, Messrs. Drysdale and Gilmour, contractors, of Leith-walk, in that city, presented a petition for the judicial winding up of the Edinburgh International Exhibition Association. The petitioners, who erected the Exhibition buildings, state that there is still a balance of £9,000 due to them, which the association have failed to pay. They add that the exhibition will result in a large deficiency and a heavy loss to the creditors, and they ask the court to appoint a judicial liquidator. The court adjourned the consideration of the petition.

At Stockleigh English, Devon, on Friday, the restoration of the church tower and the recasting of the set of four bells were commemorated. The tower, which was in a dilapidated and dangerous state, has been thoroughly restored by Messrs. Luscombe and Son, Exeter, and the set of four old bells have been recast by Messrs. Gillett and Johnson, of Croydon. The work of rehanging them has been carried out by Mr. Harry Stokes, of Woodbury, space being left for an additional bell, which will be placed in the tower very shortly, making a peal of five.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLI., XLIX., L., LI., LIII., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—C. H. M.—D. and Co.—J. S. and Co.—J. H. and Co.—M.

Correspondence.

WHITEFIELD'S CHAPEL COMPETITION.

To the Editor of the BUILDING NEWS.

SIR,—Without wishing to enter into any discussion on the above, I shall be glad if you will kindly permit me to controvert Prof. Smith's dictum—in his letter last week—that a domed ceiling is neither suitable nor safe where clear hearing and speaking are of the first importance. Really it is much to be regretted the Professor should give the weight of his name to a general statement of that kind. It depends entirely on the skill with which the dome is carried out, and no more beautiful or suitable covering for a large central area has ever been devised. Acoustically it has been successful over and over again. Let me instance only two examples in support of this: the well-known St. Stephen's, Walbrook, and Union Chapel, Islington—the latter being practically a domed church. Both are about the size of that proposed in "Lux Mundi," and both are admirable for hearing and seeing.

The question of cost has already been more than answered in Prof. Smith's report, but I have always understood that, within reasonable limits, the great object is to produce good architecture, not cheap. The whole question is begged in this case by the limit of cost being unreasonable.—I am, &c.,

J. M. BRYDON.

5, Cambridge-place, Regent's Park, N. W.,
October 28th.

SIR,—I have seen the plan which was issued to competitors for the above-named tabernacle, and I have read Professor Roger Smith's letter which appeared in your last week's issue.

My views as to the unsatisfactory nature of the Professor's award are in no way modified, and I have, therefore, given notice that I will bring the subject before the R.I.B.A. at its next business meeting, which takes place on Nov. 17.

I trust that all members who take an interest in a subject so important to the profession and to the public, will make an effort to be present, and to record their opinion.—I am, &c.,

WM. WOODWARD.

7, Duke-street, Adelphi, W.C., Oct. 29th.

SIR,—The explanation of Prof. Smith in your last issue is really so extremely unsatisfactory that I think that the whole of the facts should be placed before the Institute for their opinion as to the conduct of the assessor, whom, I believe, they nominated at the request of the promoters of the competition. This course has been taken in other competitions when the action of the referee has been called into question, and it is eminently desirable that this case should come under the R.I.B.A.'s consideration.—I am, &c.,

A COMPETITOR.

[So several other competitors have already said. But do any of them really believe the Institute will move in the matter? Did it ever do so in any case of the kind?—ED.]

ISLINGTON BATHS COMPETITION.

SIR,—The designs selected for premiums by the assessor contain so many bad features that one is astonished at the result. I have not heard during the last 30 years that the assessor has ever erected public baths and washhouses, therefore conclude that the special practical knowledge of the subject has been wanting, and so account for the extraordinary decision. Great injustice is done without a remedy, as there are no means of reconsidering architectural awards, however wrong they may be; therefore I think that the assessor should be mentioned in the particulars to architects, so that they may know if the designs are to be judged by a practical expert in the work or not.—I am, &c.,

OBSERVER.

THE "A. A." SCHEME OF EDUCATION.

SIR,—It seems a pity that in these so-called practical days generous people should waste their money in such wild goose theories as the one propounded by the A. A. under the name of "Architectural Training."

What we want is not that there should be more educational advantages outside the office, for there are plenty now to the earnest seeker after knowledge; but what is wanted is that the man who receives the premium should fulfil his part of the contract, and give his pupil an insight into the mysteries of the profession. Not one man in fifty who takes a pupil—and with him as big a premium as he can get—ever thinks of taking a little trouble with him after the articles are signed; and, unless the young man has the cuteness or natural ability to pick up a few crumbs from the assistants' boards, he only results in that miserable and pitiful creature "an improver." He receives no teaching, unless it be to mix ink or to copy letters (in my case both these), and when his articles are expired is glad to go into another office for little or no salary to learn that which another man was paid for imparting.

No, Sir; what we want is that common honesty and fairness should obtain amongst architects; and until the principals turn their attention from fine speeches at the A. A. meetings and look at home, until then will the profession be the object of scorn amongst builders and their clerks and the puzzle of the outside public.—I am, &c.,

ANOTHER OLD T-SQUARE.

An addition to the many tablets which give increased interest to the interior of York Minster has just been erected in the west aisle of the north transept in memory of three officers and 298 non-commissioned officers and men of the 51st Regiment, the 1st Battalion King's Own Yorkshire Light Infantry, who fell in India, 1872 to 1887. It has been designed by Mr. G. F. Bodley, A.R.A., the Minister architect.

The ceremony of laying the foundation-stone of the buildings which are to form an addition to Woodilee Asylum, Lenzie, was performed by the Chairman of the Barony Parochial Board, Glasgow. The style of the extension will be Elizabethan, and the cost £40,000. Accommodation will be found in the extended hospital wings for 180 inmates, while there will be two new blocks, distinct from the main buildings, for chronic patients.

Intercommunication.

QUESTIONS.

[10418.]—**Weight on Bracket.**—I should be glad to know what weight a 1in. cast-iron bracket 2ft. by 2ft., projecting from a cast-iron column, will safely carry? and how arrived at?—S. M.

[10419.]—**Horizontal Flue.**—I am about to lay a horizontal flue from glasshouse boilers, and propose to use 18in. fireclay pipes, bedded in, and covered with lias lime concrete. The length is about 70 yards, to terminate with a brick vertical shaft 30ft. high, lined with 18in. fireclay pipes half-way up, and 14in. ditto to top. The horizontal flue will have one easy bend, bringing flue to right angles. There will be a rise of about 2in. in 10ft., three manholes in the entire length. I propose to have a pilot stove at base of shaft. Will a practical reader inform me if this will answer. Suggestions will be gladly received.—ENQUIRER.

[10420.]—**Artisans' Cottages.**—What are the best books giving plans and specifications of artisans' cottages, &c.—GEO. L. JOZAT.

[10421.]—**Hotel.**—Will anyone give me the address of one or more first-class hotels built recently at a cost of from £10,000 to £20,000? Not commercial, but for visitors. North of London preferred.—ARGUS.

[10422.]—**Tennis Courts.**—Having to lay out several turf tennis courts, I shall be greatly obliged if someone will kindly inform me the best specification for forming the groundwork on an existing sandy soil.—TENNIS.

[10423.]—**Accounts**—A simple and satisfactory method of keeping accounts for an architect, with the description of books required, and explanations, would be of service to—BOOK-KEEPER.

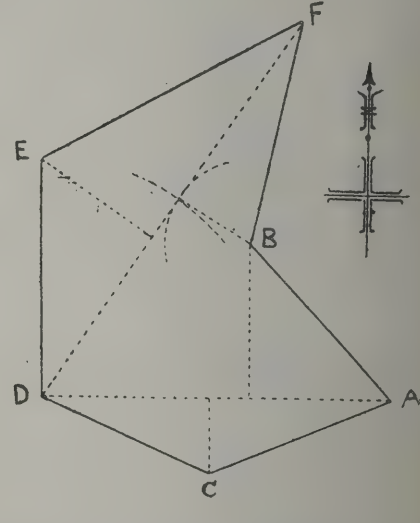
REPLIES.

[10410.]—**A Difficulty.**—"Querist" must make the best of a bad job. There is nothing to be ashamed of in the joint, although there was no necessity for it.—R. WATSON.

[10411.]—**A Builder in a Difficulty.**—Have the executed work valued by a competent surveyor, and consult a solicitor.—R. WATSON.

[10414.]—**Signing Contracts.**—Both employer and contractor should sign all contract documents, and in the case of a firm, each member must sign.—R. WATSON.

[10417.]—**Surveying.**—Commence by laying down westwards from A the line A D, 744 long. Then, looking ing in the direction of D, set off perperdiculars from A D—viz., at 303 set off on the right 333 to B, and at 386, 161 on the left to C Now, with D and B as centres, and radii 520 and 181 respectively, describe arcs cutting one another, and through their point of intersection draw D F 970 in



length. From 413 on D F set off a perpendicular on the left to E, 290 long. Join A C, C D, D E, E F, F B, and B A, which are the boundary of the field. This figure is plotted to a scale of 4 chains to an inch. This survey is supposed to have been made by the aid of a cross-staff for setting out the perpendiculars, and for the benefit of any student reader who may be tempted to imitate this example, let me add that modern surveyors never think of using this system of surveying, as it is, in fact, only adapted for approximate measuring, such as, for instance, finding the area of mowing done by piecework. Mr. Usill, in his "Practical Surveying," p. 29, tersely says: "I have no hesitation in condemning its use upon nearly every ground. . . . . I cannot see any feature of recommendation in the cross-staff.—N. D.

Earl Compton submitted to the London County Council, on Tuesday, the report of a committee, which recommended the improvement, at a cost of £300,000, of an area of 15 acres in Bethnal-green and Shoreditch, which the officer of health had condemned as insanitary. An amendment in favour of a preliminary inquiry as to the liability of the owners of the unhealthy houses in question was unopposed, and the discussion was adjourned to a special meeting to be held on Monday next.

LEGAL INTELLIGENCE.

Re William Oldrey and Co.—Under the failure, which occurred in July last, of G. Pluckrose and H. Oldrey, builders and contractors, trading at Westbourne Park and Kensal-road, a summary of the debtors' affairs has been issued, with the Official Receiver's observations thereon. The debtors, under the will of the late William Oldrey (who died in September, 1886), acquired his business, and had since traded in partnership. In November, 1888, a building upon which the debtors were engaged collapsed, several workmen being killed and others injured. Actions for damages followed, the result of one of such actions (treated as a test case) being adverse to the debtors. They attribute their failure to this fact, and estimate their contingent liabilities under this head at £4,600. The statement of affairs shows gross liabilities £12,793, of which £4,702 are expected to rank, and an estimated surplus in assets of £125. The public examination stands adjourned to Friday in next week, Nov. 7.

In Re R. Evans.—A receiving order having been made on the 18th October, 1889, against Robert Evans, an architect and surveyor, of Southdown-road, Wimbledon, a statement of affairs has been submitted, in which the unsecured liabilities are returned at £6,118, with an estimated surplus in assets of £1,355. The debtor commenced business about 30 years ago without capital, and in 1869 he was adjudged bankrupt, no dividend apparently being paid. He again became a bankrupt in 1878, when trading at Chiswick as a builder, but the adjudication was annulled upon payment of a composition of 1s. in the pound. He subsequently acquired interests in certain building estates, arranging with a firm of solicitors to undertake the financial working of them for their mutual benefit. He attributed his failure entirely to his inability to obtain a settlement in respect to these estates with his partners, and alleged that the greater part of his liabilities are in reference to guarantees for debts incurred by builders on the property which he has now been called upon to pay.

Frontage Lines.—At Lambeth Police-court on Saturday, two summonses were heard against the City and South London Railway Company for building stations at the corner of New-street, Kennington Park-road, and Harleyford-road beyond the line of frontage, and without the consent in writing of the London County Council, contrary to the statute 25 and 26 Vic. c. 102, and 45 Vic. c. 14. The question at issue was with regard to the building of two of the company's stations. These stations, it was contended, had been built upon the old forecourts of houses and brought out right to the garden rail, and beyond the original and proper line of frontage. The County Council considered the company had built such stations without sanction, and contrary to the Building Act. The defence was that the company had powers under their own Act of Parliament to do as they had done. Mr. Mullins, clerk to Mr. Banister Fletcher, district surveyor, was called, and proved that in May, when the station at New-street was in course of erection, communications were sent to the company, and a caution was given that such building was beyond the proper line of frontage, and that they might be proceeded against. The further hearing of the matter was adjourned.

St. Andrew's Mission Church, Acton, and Brentford district schools, Isleworth, are warmed and ventilated by means of Shorland's patent Manchester grates, supplied by Mr. E. H. Shorland, of Manchester.

On Wednesday next the ceremony of turning the first sod of a new railway, which is to connect the rising seaside resort of Lee-on-the-Solent with the South-Western Railway, and so bring it within a three hours' journey of London, was performed by the chairman of the railway company. The new railway will run along the coast from Brockenhurst, having a station at Privett, and terminating at a station within a few yards of the Lee pier. The contract for the line has been entrusted to Mr. D. G. Lang, of the Adelphi, Strand, it being stipulated that the work shall be completed by July 1 next year.

The foundation stone of the cottage hospital at Bromsgrove was laid on Friday. The site is on the New-road, near to the town. The buildings will be arranged on the pavilion principle, and will comprise a central block, two stories in height, consisting of entrance hall, vestibule, central hall, day rooms for convalescents, and matron's room, with necessary stores and offices at the rear, and bedrooms for matron and servants, store rooms, &c., on the upper floor. On each side the central block the wings will be connected with corridors leading to the male and female wards respectively. Each ward will be 35ft. by 18ft. 6in., and 12ft. 6in. in height. There will be accommodation for six beds in each ward. The plans are by Mr. John Cotton, architect, of Birmingham; Mr. Jonathan Brazier, of Bromsgrove, being the builder.

WATER SUPPLY AND SANITARY MATTERS.

Cambridge.—The town council has adopted the conclusions of Mr. James Mansergh as to the mode of collecting the sewage of the town, and has asked Mr. J. T. Wood to modify his scheme in general accordauce with those suggestions.

Swinton.—The sewage purification works have just been completed. Swinton is about five miles from Manchester, and contains a population of about 16,000. The sewage is dealt with upon a farm of about 32 acres in extent. Until recently the method of treatment was by a system of irrigation. In course of time this method proved totally inadequate, and the state of the brook into which the effluent passed became so bad that legal proceedings were commenced some time ago by riparian owners. The local board then adopted the present scheme. The sewage is conveyed to the farm by means of three main sewers, two low level and one high level, but all high enough to obviate the necessity of pumping. The purification process adopted is that of the International Sewage and Water Purification Company, Limited. The outfall sewers discharge into a small chamber, in which is placed a strainer with cleaning rakes attached, where all large solids are arrested. The sewage in passing then drives a 6ft. undershot water-wheel, which supplies the power necessary for working the mixer (Beloe's patent), by means of which the precipitating substance is added to the sewage. The precipitating and deodorising material used is called ferozone, and of this $12\frac{3}{4}$ cwt. per million gallons is used, costing 9s. 6d. per day, or £2 0s. 4d. per million gallons (including 13s. 6d. per ton for carriage). The settling tanks are four in number, with a total capacity of about 250gals. Two of the old tanks have been re-arranged and utilised, the cross-walls having been removed, and two new tanks have been built. The tank effluent is conveyed by pipes to the polarite filter beds. These have a total area of 350 square yards, and are divided into four. The bed consists of a total thickness of 3ft., made up in layers as follows:—4in. pipes embedded in 6in. of loose broken stone, 5in. of gravel, 4in. of sand, and at the top 6in. of polarite mixed with sufficient sand to make a layer 12in. in thickness, and 9in. of sand. The polarite is a specially-prepared porous, rustless, magnetic oxide of iron, insoluble in water. The purified effluent finally issues into a white glazed brick chamber, perfectly bright, without colour, and odourless. The total annual working expenses amount to £420, or $6\frac{3}{10}$d. per head of the population. The sewage purification works, now completed, have cost about £3,800. This sum includes all new works, but does not include anything for land, law, and engineering expenses, nor for the old works re-used, except alterations for same. The new works were designed and completed under the supervision of Mr. Theo. S. McCallum, C.E., of Manchester. The contractors were, Mr. H. Davies, Pendlebury, for the tanks, &c.; and Mr. S. Johnson, Pendleton, for the filters, &c.

CHIPS.

Sir Edgar Boehm is engaged upon a recumbent statue of the late Bishop of Durham, which is to be placed in Durham Cathedral.

The Cairo correspondent of the *Times* declares that there is absolutely no truth in the alleged destruction of the Pyramids for building material. The facts are that the loose stones accumulated at the base are being removed, which will lay bare the lowest courses and display the Pyramids to greater advantage. The work is being conducted under the superintendence of the museum authorities.

Mr. W. H. Scriven, architect and surveyor, Leeds, attempted to commit suicide on Friday by shooting himself in the head when in the closet adjoining his offices in Commercial-buildings, Park-row, in that town. It is stated that for about four years Mr. Scriven's mind has been seriously affected, and has suffered from severe depression.

A stained-glass window has lately been placed in Newcastle-under-Lyme parish church, in memory of the late Mr. Evan Oakes Williams, of Newcastle-court, Shropshire. The subject is "Our Saviour blessing little children," with canopy and base. The window is by Mr. John Davies, 73, Wyle-cop, Shrewsbury.

A correspondence has taken place in the *Birmingham Daily Post* on the drainage system adopted in that town. Mr. Thomson Plevins, architect, Birmingham, points out several difficulties in the water-closet system, and while objecting to earth-closets as unsuitable for general use, and to pan closets as offensive, he suggests that the health committee of that town should recommend flushing closets. Dr. Lawson Tait concurs in Mr. Plevins' objection to the ordinary w.c., adding: "The interception principle, of which the pan system is only a temporary and somewhat clumsy exponent, is the only safe one for a town constituted as is Birmingham."

Our Office Table.

The inaugural meeting for the present session of the Royal Institute of British Architects will take place on Monday evening next, when an address will be delivered by the President, Mr. Alfred Waterhouse, R.A. A business meeting of the Institute will be held a fortnight later, and on the evening of Monday, the 1st December, Mr. R. Phené Spiers, F.S.A., will read a paper on "Sassanian Architecture." The following general meetings will be—December 15th, to be devoted to the reading of short papers on an art subject to be hereafter announced; February 2nd, "The School of Bramante and its Expansion Throughout Italy and the Rest of Europe," by Baron Henri de Geymüller; February 16th, "Seville Cathedral," by Mr. G. Somers Clarke, F.S.A.; March 23rd, "Some Aspects of Sculpture in Relation to Architecture," by Mr. George Simonds; April 6th, "Origin and Mutation in Indian and Eastern Architecture," by Mr. William Simpson, R.I.; April 20th, short papers on a subject not yet announced; May 25th, "Some Old Churches in the Neighbourhood of Cleves," by Mr. H. W. Brewer; and June 22nd, "Mediæval Architecture in Sweden, with special reference to the Cathedrals of Upsala, Abo, and Lund," by Mr. J. Tavenor Perry.

In his "private and confidential" report to the London County Council on the water supply of the metropolis, Mr. A. R. Binnie, their engineer-in-chief, points out that at no great distance of time London must have a new source of supply, which may be obtained either from the Upper Wye or the Upper Severn, or from Dartmoor. Dartmoor has not been suggested before as a source of supply for the capital, but its elevation, heavy rainfall, and clean granitic gathering ground make it a site where good water could be obtained, and its distance is not against it. It is now thought that the County Council will not agree to the arbitration clause such as the City Corporation propose in their Bill for the purchase of the water companies' undertakings, and it is stated that the Council will introduce a Bill of their own, providing, so far as they can now provide, for a new source of supply. The estimated cost of the Upper Wye scheme is £9,000,000 to supply 230,000,0000 gallons per day, and that of the Upper Severn is £11,400,023 to supply the same quantity.

An exhibition of works by David Cox will be opened on Tuesday next at the Birmingham Art Gallery, which will probably prove to be the finest collection of pictures and water-colour drawings by this landscape artist ever brought together in one room. Mr. Whitworth Wallis, F.S.A., the director, has succeeded in borrowing more than 450 examples. Among the numerous collectors who are lending may be mentioned Lord Armstrong, Lord Willoughby d'Eresby, Sir W. H. Houldsworth, M.P., Mr. W. Cuthbert Quilter, M.P., Mr. James Orrock, R.I., Right Hon. Joseph Chamberlain, M.P., Mrs. Enoch Harvey, Dr. Jex Blake, and many others, including members of the Betts and Nettlefold families. Messrs. Holbrook Gaskell, William Agnew, Peter Allen, Philip H. Rathbone, Benson Rathbone, R. D. Holt, E. Grindley, and J. A. E. Rayner are also lending works. The late Mr. Enoch Harvey, who took the greatest interest in the exhibition, had promised to lend 22 pictures, which, by the kindness of Mrs. Harvey, will be seen in a prominent position. The exhibition is being held in connection with the Congress of the National Association for the Advancement of Art, which will be in Birmingham on Tuesday, Wednesday, and Thursday in next week.

The following gentlemen, having satisfied the examiners at the examination held in London on the 3rd and 4th inst. by the Association of Municipal and Sanitary Engineers and Surveyors, have been granted certificates of competency by the Council of the Association—viz.: C. F. Ball (Croydon), W. Dyach (Aberdeen), F. J. Edge (Neath), W. Hall (Ealing), J. Manley (Chacewater), and F. Sumner (Kilburn). The next examination will be held in London in April, 1891.

The first concert of the session of the A.A. Lyric Club was held at the headquarters, Mona Hotel, Covent Garden, on the 28th inst. The programme, arranged by Mr. J. D. Scott, was very successfully carried out, Mr. W. Burrell, the

president, being in the chair. The following gentlemen, amongst others, gave their services, which were very heartily appreciated: Messrs. J. D. Scott, Pywell, Lidstone (violin), W. E. Johnson, S. B. Garcia, F. H. Collins, and C. D'Imhof, who was again the accompanyist. Any member of the Architectural Association who is desirous of joining the club should apply to the hon. secs., Messrs. W. H. White and Theo. Moore.

CHIPS.

By a fire, which took place at Messrs. Boyers', builders and contractors, Amberley-road, Paddington, on Saturday night, the carpenters' workshops were destroyed.

The picturesque old tower of Llanisheen Church, near Cardiff, has been thoroughly restored, under the supervision of Messrs. Kempson and Fowler, of Llandaff; new bell-framing and a peal of six bells have also been added. The work has been carried out by Mr. G. Hartnell, builder, of Crwys-road, Cardiff, and the bells supplied and fixed by Messrs. Llewellins and James, of Bristol.

Messrs. Colls and Sons notify the removal of their city offices from Moorgate-street to No. 5, Coleman-street. The new premises will contain a sample-room, which will give facility for the selection of fittings, materials, and decorations in general use, and of the more modern improvements in building appliances. The yard and main works will remain, as heretofore, at Camberwell.

A special service was held in Bristol Cathedral yesterday (Thursday) afternoon in connection with the celebration of the restoration of the north transept, and the unveiling of the window given by the Dolphin Society as a memorial of Edward Colston.

A new chapel has been opened at Heckmondwike, built from the designs of Mr. A. A. Stott. The chief contractors were Messrs. W. and J. Milner, of Mirfield, for masonry, and Messrs. Fothergill and Schofield, of Batley Carr, for joinery.

A set of iron floriated hinges has been made for the entrance doors of St. Colman's Cathedral, Queenstown, from the designs of Mr. C. G. Ashlin, R.H.A. They are in the Early French style, similar to those of the Cathedral of Notre Dame, Paris. They have been wrought by Messrs. Fagan and Sons, of Brunswick-street, Dublin.

Maryon Park, the new recreation ground at Charlton, was formally handed over to the London County Council on Saturday by the donor, Sir S. Maryon Wilson.

M. Charles Verlat, director of the Academy of Fine Arts at Antwerp, has died, aged 66. He was a pupil of De Keyser, and excelled in all branches of the pictorial arts, especially in animal painting.

The local board of health for Clevedon, Somerset, have received the written report of Mr. J. Abenethy, C.E., of London, on the present condition of the pier, and recommendations for its improvement. He recommended that the present head be removed and a new one be constructed of cast-iron screw piles, connected by iron bracing, utilising some of the old iron. On the face of the pierhead should be erected a wooden landing stage; and the whole deck should be relaid and the iron-work scraped and painted. Three alternative plans were submitted: the first to cost about £7,000, the second about £9,000, and the third about £15,000.

The School Board for Bath have appointed Mr. E. R. Robson assessor in the competition for a new school in the Lower Bristol-road, which is confined to architects practising in the city.

A new Bible Christian chapel, Miskin-street, Cathays, Cardiff, was opened on Wednesday week. The building, which will seat about 600 persons, has a gallery, and has cost over £2,000. The architect was Mr. J. F. Fawckner, of Newport, and the builder Mr. L. Purnell, while Mr. A. M. Blake acted as clerk of the works.

The new infirmary at Liverpool, built from the designs of Mr. A. Waterhouse, R.A., was opened by the Duke of Clarence and Avondale on Wednesday.

A new public hall has been erected at Kingston-on-Thames, and special attention has been paid to the ventilation, which is carried out on the Boyle system, the extraction of the vitiated air being effected by the latest improved form of the self-acting air-pump ventilator.

A second section of the restoration of the Norman Church of Wroxeter, Salop, was completed last week. Last year the tower was repaired and partially rebuilt at the cost of the Duke of Cleveland, and now a porch has been added to the church, the outlay being borne by the same donor. For both works Mr. H. H. Treasure, of Shrewsbury, was the architect, and Mr. Muirhead, of Newport, Salop, the contractor.

MEETINGS FOR THE ENSUING WEEK.

Saturday (To-Morrow).—Association of Public Sanitary Inspectors. "A Pioneer of Sanitary Science," by the President, Dr. B. W. Richardson. Carpenters' Hall. 6 p.m.

Monday.—Liverpool Architectural Society. "Notes in Holland and Belgium," by J. M. Woodhouse, of Manchester. 7 p.m.
Society of Engineers. "Utilisation of Exhaust Steam," by Percy Griffith. 7.30 p.m.
Royal Institute of British Architects Opening Address by the President, Mr. A. Waterhouse, R.A. 8 p.m.

Tuesday.—National Art Congress at Birmingham. Presidential and other Addresses, 11 a.m. Sectional Meetings, 2 p.m.
Glasgow Architectural Association. "Greek Architecture: Late Period," by R. J. Gildard. 8 p.m.

Wednesday.—National Art Congress at Birmingham. Address by T. Graham Jackson. 11 a.m.

Thursday.—National Art Congress at Birmingham. Address by A. H. Mackmurdo. 11 a.m.

A new London Board school in Prospect-terrace, Gray's Inn-road, was opened on Friday. It accommodates 995 children, and cost £13,000 for building and £19,000 for the site, which has an area of 19,000sq.ft.

The pulpit to be erected in the choir of Norwich Cathedral is now making good progress in the studios of the sculptor (Mr. Harry Hems, of Exeter), and would have been finished and *in situ* ere this had not the lengthened strike in the western capital stopped nearly all work there throughout the past summer. It is to be entirely of English oak, and has been designed by Mr. John P. Seddon, the *motif*, as regards general detail, having been the exquisite oak carving on the old stalls, close by where the pulpit is destined to stand. In niches all around the body of the pulpit will be statuettes in the round, representing the four evangelists and the four great preachers, SS. Peter, Paul, James the Bishop, and Stephen.

Sir Frederick Mappin has presented a stained-glass window to the church of St. John, Ranmoor, near Sheffield. The subject is the Crucifixion, and the commission has been executed by Mr. W. F. Dixon, William-street, Lowndes-square.

The fine church of St. George, at Easton-in-Gordano, near Bristol, has just been presented by Mr. Henry Mirehouse, with a reredos constructed of polished alabaster and English marble. The work rests upon a massive retable of Ipplepen red variegated marble, and consists of a triple array of recessed panels, with cusped and crocketed gables, all in alabaster. The heads of the arches are supported by carved capitals, resting upon serpentine columns. The figures are carved in high relief, and are in outline thrown up by backgrounds of gold tesseræ. The central group represents the birth of our Lord. Mr. Harry Hems, of Exeter, executed the reredos, which was unveiled on Sunday.

A new side altar, of the Sacred Heart, and two choir screens are being fixed in St. Mary's Church, Warrington, the whole of the carving, &c., being executed by Messrs. Boulton and Sons, of Cheltenham, from the designs of Messrs. Pugin and Pugin, architects, London.

The Judicial Committee of the Irish Privy Council approved on Wednesday a scheme for the construction of a light railway from Skibbereen to Baltimore, which the Cork and Bandon Railway Company have offered to work, and for the construction of which the Treasury has made a gift of £6,700.

A poll of the ratepayers of St. Mary, Newington, has taken place on the question of the adoption of the Public Libraries Act. The number of voting papers issued was 12,724, but only 4,889 ratepayers voted, 2,841 being in favour, and 2,048 against the proposal.

A village hall at Orpington, Kent, built at a cost of £5,000, was opened by Sir John Lubbock on Wednesday week. Mr. G. St. Pierre Harris, of London and Orpington, was the architect, and Messrs. Holt and Son were the builders.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

Balderton, near Newark.—For almshouses in six dwellings. Messrs. J. W. Benwell and W. Taylor, 25, Park-square, Leeds, architects:—

Baines	£759	0	0
Crossland	699	0	0
Smith and Lunn	685	0	0
Brown, G., and Son	685	0	0
Wand, Balderton (accepted)	660	0	0
Brown, W.	629	0	0

Rest of Newark.

Bristol.—For alterations and additions to No. 35, High-street, Bristol. Mr. H. D. Bryan, 24, College-green, Bristol, architect:—

Scull, A. S.	£750	10	0
Perrott, J.	725	0	0
Lewis, T. R.	709	0	0
Church, W. (accepted)	674	0	0
For shop-front:—			
Lewis, W. H.	49	10	0

Cardiff.—For the enlargement of the police-station at Roath, for the Cardiff town council:—

Robbins, J., Roath (accepted)	£830	0	0

Chester-le-Street.—For further additions to jam factory, Chester-le-Street, for Mr. J. W. Lucock. Messrs. Plummer and Burrell, 46, Cloth-market, Newcastle, architects:—

Norman, W. (accepted)	£183	18	3
Mole, H. (accepted)	54	5	9

Both of Chester-le-Street.

Cowbridge, Glam.—For the erection of a house and three cottages, for Mr. W. W. Nell. Mr. F. J. Veall, Cardiff, architect. Quantities by the architect:—

Williams and Sons, Talgarth	£1,575	0	0
Lewis, H., Cardiff	1,420	0	0
Elliott and Co., Treforest	1,354	0	0
Haines, J., Cardiff	1,305	0	0
Purnell, O., Cardiff	1,297	0	0
James, W. A., Cowbridge	1,265	4	0
Burton and Co., Cardiff (accepted)	1,195	0	0

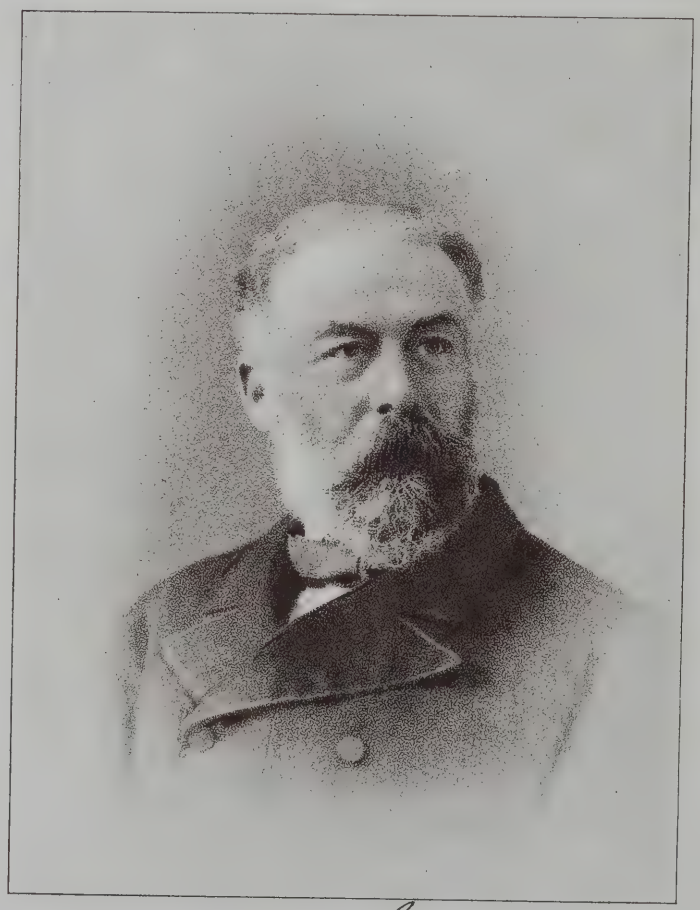


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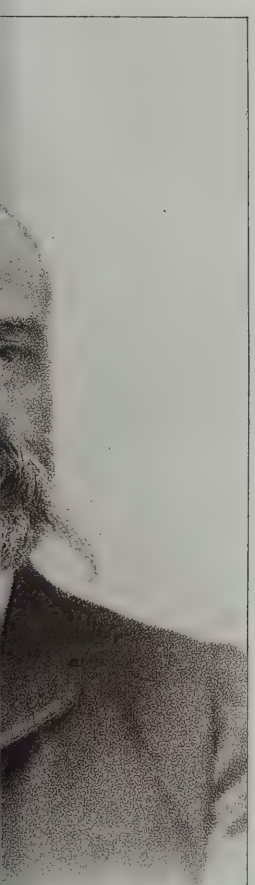
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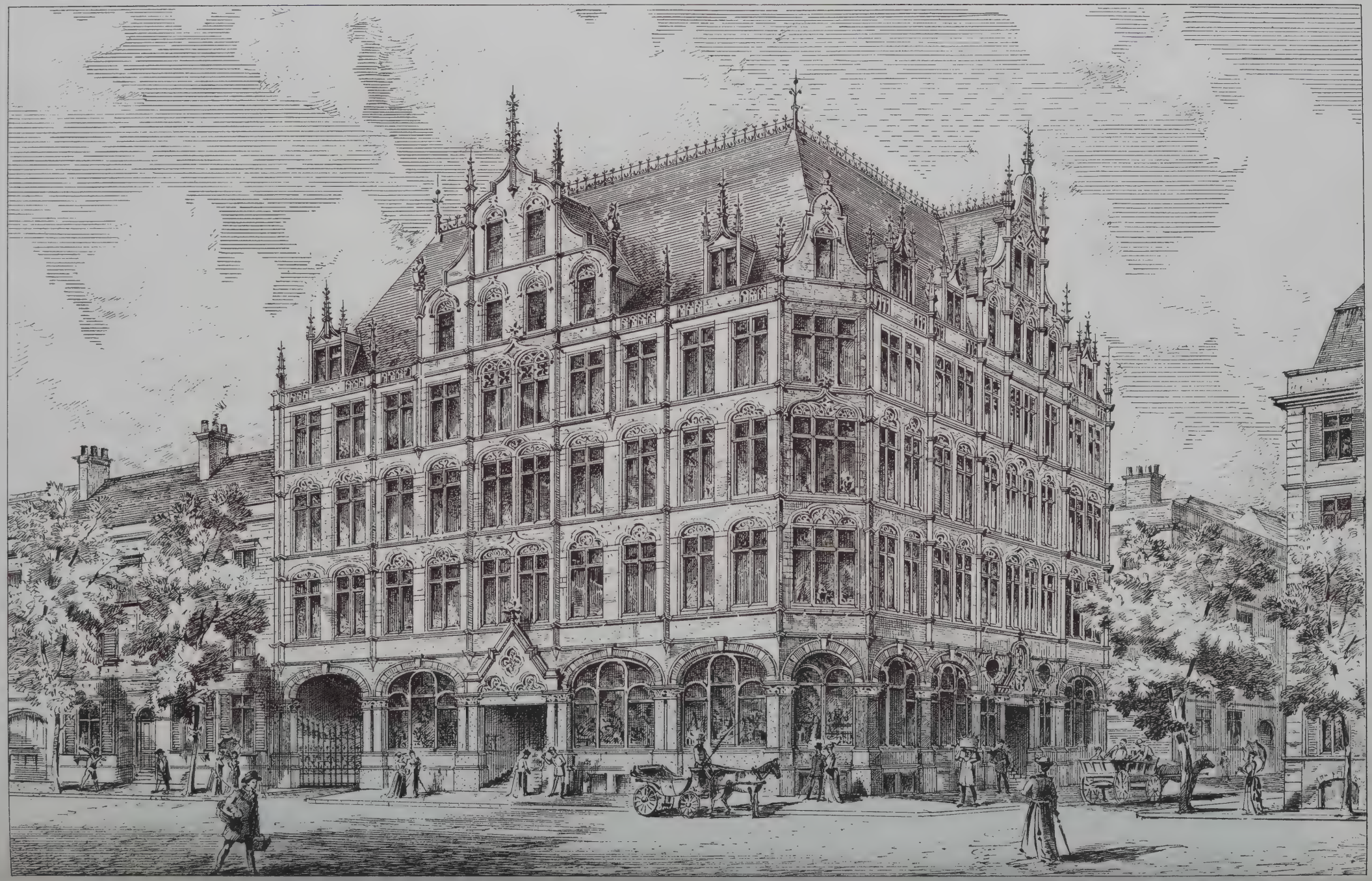


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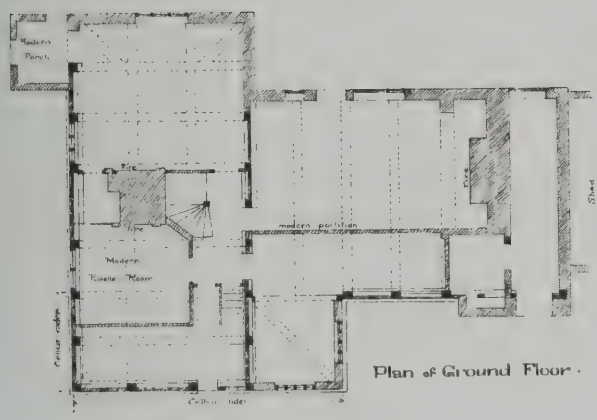
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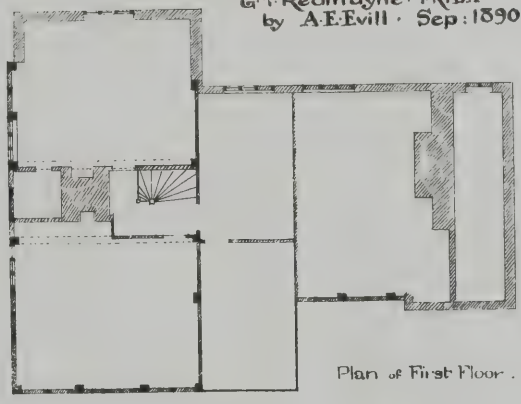


East Elevation ·

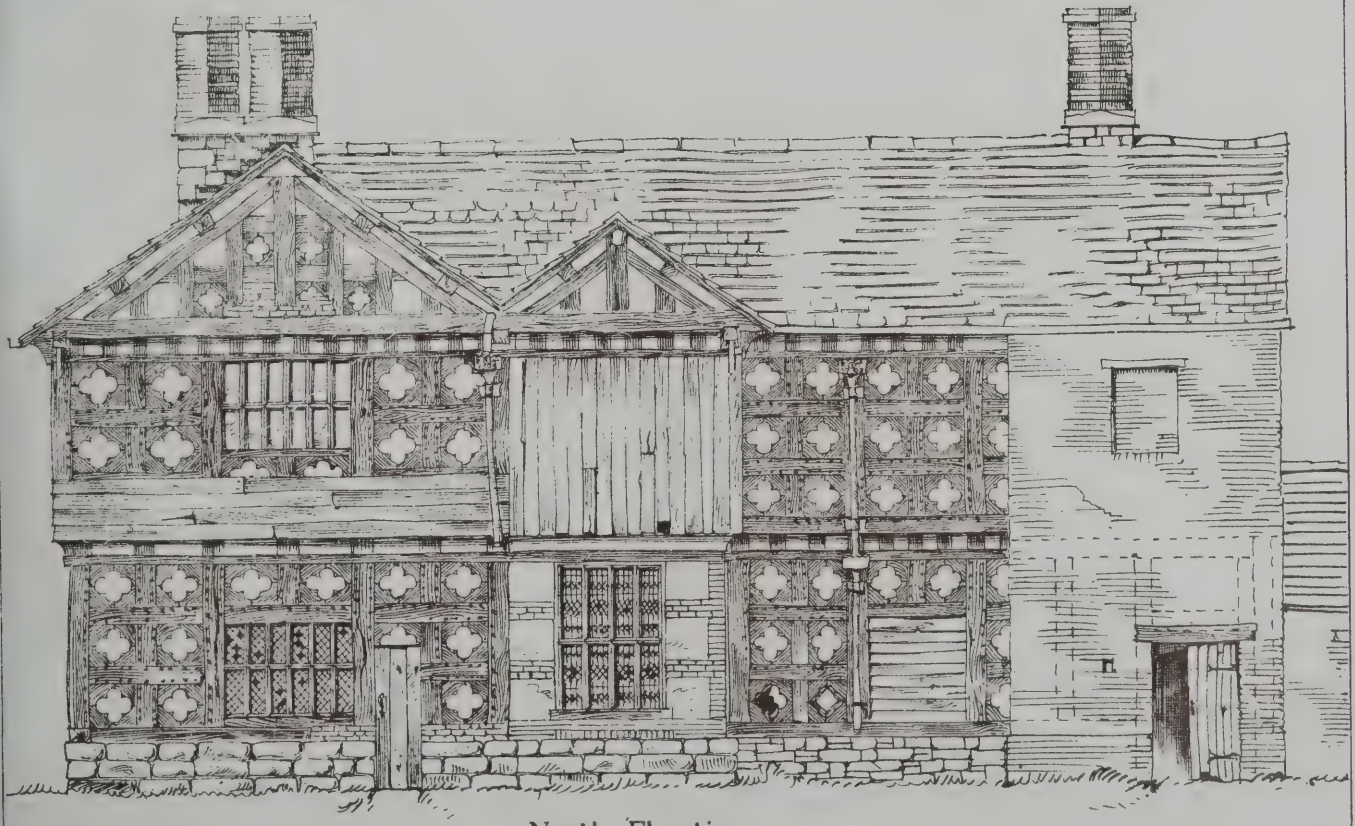
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G. T. Redmayne · F.R.I.B.A.
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Plan of Ground Floor ·

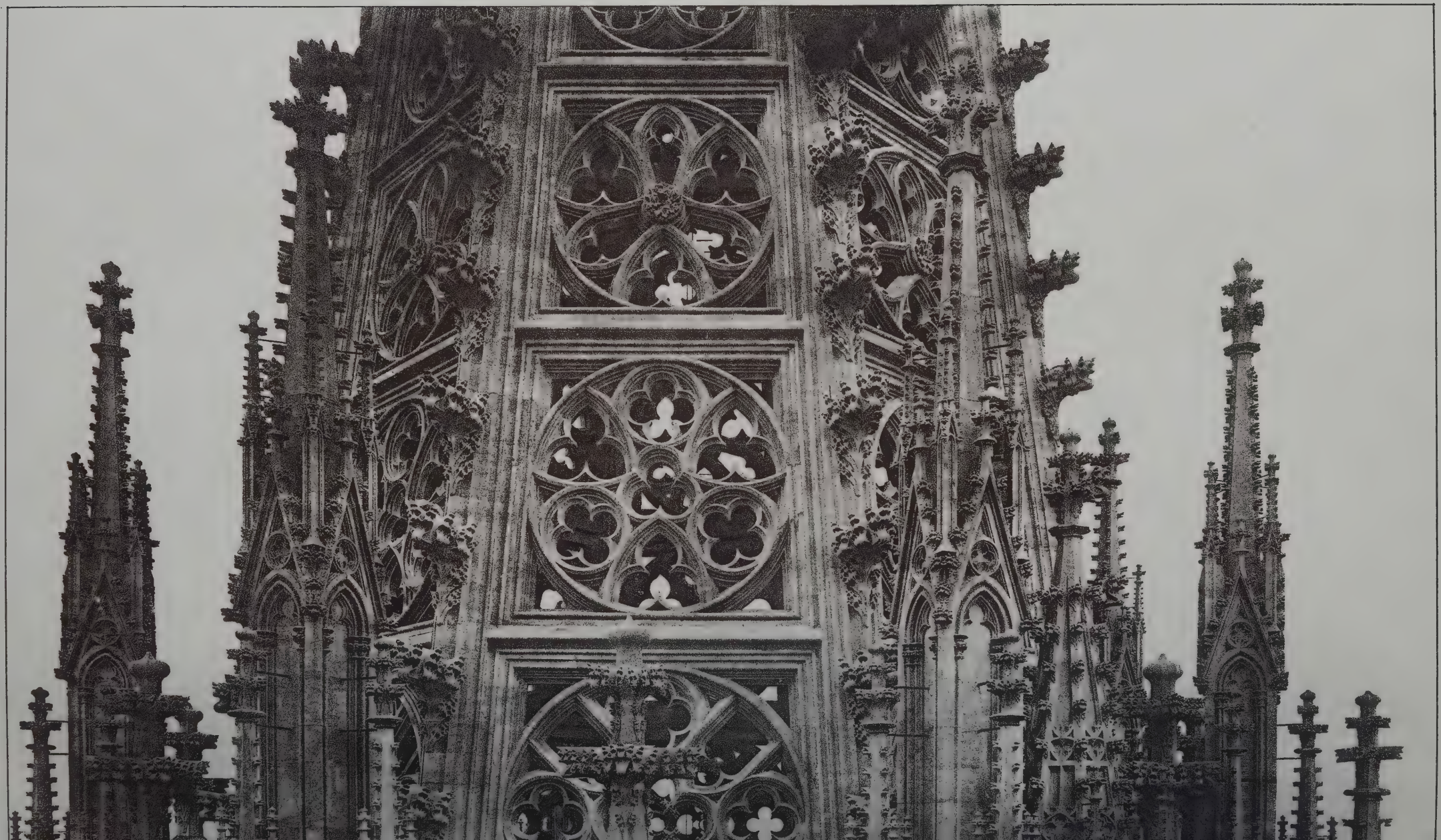


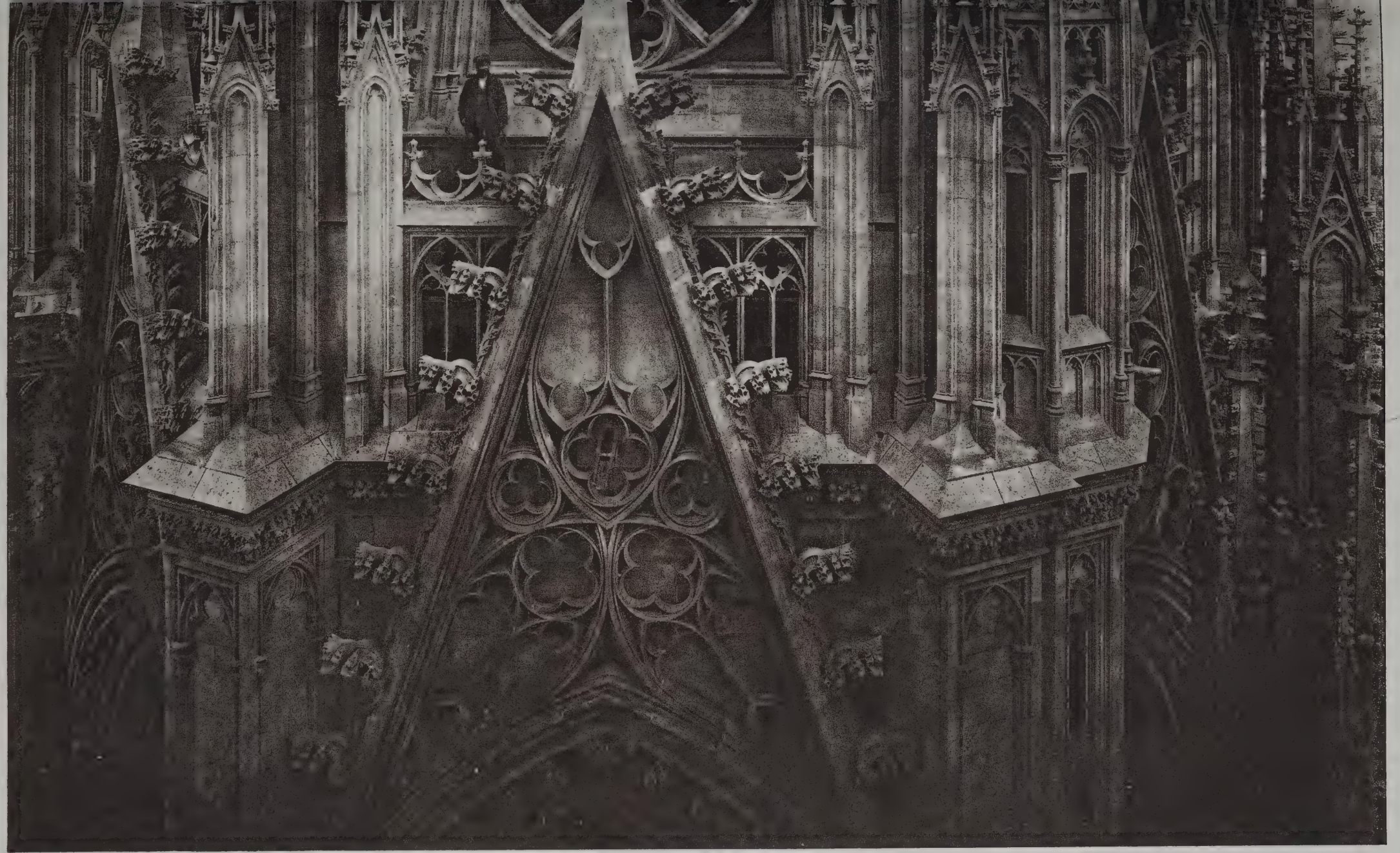
Plan of First Floor ·



North Elevation ·

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FROM A PHOTO BY ANSELM SCHMITZ

COLOGNE - CATHEDRAL · DETAIL OF WESTERN SPIRES

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LIX.—No. 1870.

FRIDAY, NOVEMBER 7, 1890.

PATENTING PLANS.

THE idea of patenting the plan of an architectural design is at least somewhat novel; but one well-known firm of Sheffield architects have been venturesome enough to take that step, and they send us a copy of the specification of their patent for "Improvements in arranging the plan of buildings applicable to Government, county, municipal, and other public offices and courts." Messrs. Flockton and Gibbs, whose design for the Sheffield Municipal buildings we illustrated on July 25th of the present year, and which was an ingenious endeavour to make each set of offices for a department complete in itself, and to avoid the confusion arising from a number of offices ranged along a corridor, have patented the principle therein shown. We refer our readers to the plans we gave of these designs, to make more clear the nature of the so-called invention. Referring to the printed copy of the specification of the patent sent to us, Messrs. Flockton and Gibbs state: "The plan generally adopted in buildings of this class is the arranging of rooms on one or both sides of a passage or hall common to the public and all the departments. Where there are a number of offices or other rooms in one department, these, if placed along one side only of the public passage or hall, as is the case in the Manchester Town Hall and the Birmingham Council House, are necessarily so extended as to be very inconvenient for intercommunication and control; the occupants of the rooms at one end of the range, if they wish to consult with or give orders to the occupants of the rooms at the other end of the range, must either pass through each room between them, in which case there is liability to disturbance of the occupants of the intermediate rooms, or they must pass down the public passage or hall, where they are liable to meet with the public, and be prevented speedily attending to their business." It is also stated that the control by the superior officials of a department in so extended a line is difficult, and if each room has a door into the public passage there is loss of control over the subordinate officials, and the number of doors is confusing to the public and to the occupants of the rooms by unnecessary inquiries made by strangers. The plan for which a patent is claimed is described in the following clause:—"The plan for which we claim novelty is the placing of the rooms of each department in a separate wing or compartment of the building arranging the rooms within it as if each wing or compartment were a separate building with entrance for the public to each department through or by an inquiry or general office, and with no other entrance for the public to the private offices; and combining the several departments into one building by grouping the wings or compartments around a central public hall or passage, through which alone the public can gain admittance to the inquiry or general offices of the several departments." The plan so formed can be restricted to a one-story building or repeated with some modifications on each floor of a many storied building with a public staircase or hoist in the public hall. It is also made a part of the patent, that "every public entrance should be direct to the central public hall or passage, and lead nowhere else. The wings or compartments may be varied in form, and the rooms of a department may be grouped within the wing or compartment in any plan most convenient for the requirements of that department, provided that the entrances to the private offices are by or through an inquiry or general office." The specification further states that each wing or compartment may have an official passage from the inquiry office to the private offices, and also an official entrance from the street to the official passage. The advantages claimed by this plan are briefly these: The public cannot intrude upon the privacy of the superior officials without being announced, and the private offices being away from the central public hall, are more quiet than if they adjoined thereto. Each wing is complete in itself, the supervision and the control of the entrances and exits of subordinate officials being more perfect. The length of the public hall or passage is reduced to a minimum, and the distances thereby diminished. The plan of building is rendered more simple by the arrangement of one entrance to each department than by having several doors and staircases. The public can find the department wanted with less trouble. The officials may communicate without appearing in public. Other advantages are that courts or areas may be minimised, as all the windows may face outside, the plan occupies less area, and secondary public staircases are not necessary. The specification goes on to state that the authors are not aware of any office building, public or private, having been built on the plan proposed. That adopted at the Glasgow Municipal Buildings, where several of the departments are detached from other departments on the ground floor by carriage drives, yet has public passages through the several departments, and has none of the advantages claimed for the patented plan. At the Leeds Municipal Buildings there are five entrances from the central hall into the accountant's departments on the ground floor. The Greenock Buildings have the collectors' offices of the various departments grouped round a central hall; but the other offices are separated, and can be only reached by public stairs and passages. The Admiralty Offices have the novel arrangement of double passages, with area for light and air between, but this rather increases than diminishes the disadvantages of the old system. Plans are appended to illustrate the principle as applied to two departments on the ground floor and on the upper floor of the same building; another plan to show the principle adapted to three departments on one floor of a rectangular building, and also to a cruciform plan; and a third plan gives the arrangement applied to six departments on one floor. Other arrangements can be formed on the same principle. The plan for two departments on the ground floor is practically the same as we illustrated on July 25th for the authors' design for the Sheffield Municipal Buildings.

Our readers will see that the principle on which Messrs. Flockton and Gibbs have claimed protection is that of grouping the departments of a public building, each complete and separate in respect of its entrances, round one public hall. As the authors invite the members of the profession and the public to take the opportunity of opposing the grant of the patent should there be any ground for so doing, we leave the principle of planning to the attention of our readers; at the same time, at the request of the authors, we draw attention to the following, a section of the Patents, Designs, and Trade Marks Amendment Act, 1885: "When a complete specification has been accepted it is open to public inspection, and notice of acceptance will be advertised in the official journal of the Patent Office. Any person may at any time within two months of the date of such advertisement [29th October last] give notice of opposition to the grant of a patent on the grounds stated in Sec. 11 of the Patents, &c., Act, 1883." We will not enter here into the alleged novelties of the plan, as we are of the opinion that the same principle has been used, and may be seen on plans of public offices. The main point of Messrs. Flockton and Gibbs's plan is that there is a single public entrance to each department through a general office, which is close to the public hall, the passages being confined to the use of officials of the departments.

The question which most concerns us is the advantage of protecting by a patent any improvement or novel feature of arrangement. As every architectural design is more or loss of an invention, it may be asked Why should not the architect avail himself of the Patent Act as well as any other inventor? Would not the system be a stimulus to invention? Copyrighting designs is not unknown in America, and we have now before us a series of copyrighted designs of "Modern Rural Homes," arranged and designed by the "National Architects' Union," of Philadelphia. We dread to think of what patenting the elevational features of designs would lead to.

The advantages of protecting by patent a clever plan are, first, that it would be an incentive to invention amongst the few by giving them an individual interest in their design; second, a good idea would be more likely to be perfected; there would be attempts to improve and patent modifications. On the other hand, there are objections. The patenting of a design would seriously hamper the profession, for they would have to steer clear of existing rights. It would handicap a large proportion of architects who now avail themselves of the common property in architectural ideas. Many very clever plans are a combination of the grouped and corridor principles; but these would be avoided if they were protected by patent. For instance, the "pavilion" system with the isolated lobby has been a commonly-adopted principle in all hospital plans; but if the inventor had patented the idea, so desirable a plan would have been avoided till the expiration of the patent. The radiating, the circular systems of ward construction are ideas that can be made to subserve the purpose of designers; but if they were protected they would be very little adopted.

The "central hall" principle of designing buildings for Congregational churches might have been patented if ancient examples had not shown the same principle; if it had been, fewer attempts would have been made to utilise the plan. A further disadvantage of the system of patenting would be to introduce a commercial element into design. The few who became patentees of novelties in architecture would take care to make the most of their inventions, and only allow them to be used on payment of a royalty. To the bulk of the profession this would be prejudicial. Independent design could not be encouraged as it is now. But there are besides, practical difficulties in the way of applying the Patent Act to designs or plans of buildings. An architect who had thought out a good plan would have to make a diligent search at the Patent Office to see if he had been forestalled; when a complete specification has been accepted by the Patent Office, it will be the duty of the profession to give notice of opposition to the grant of a patent on any of the grounds mentioned in the Act. How is a man to know whether his idea has not been actually used before? A most costly search would be necessary to satisfy him. The difficulty is in preparing a specification or drawing of any particular arrangement that will be definite enough; as any idea to be of real value must be sufficiently elastic to admit of being varied to actual circumstances. We can understand an architect patenting a new spring door, a fireproof floor, or a roof—things that admit of easy definition—but it

becomes very problematical to show any order or arrangement of doors, walls, or departments in connection with a central hall that shall entitle its author to a grant of a patent—a mere matter of order in planning departments can scarcely be a subject for a patent. At least it appears to us doubtful whether patented plans may not be more imaginary than real, and there would be many ways of rendering them void. What would prevent an architect from adopting a modification of a patent? In any alteration to an existing building a very slight modification might produce exactly the arrangement for which a claim has been made.

THE ROYAL SOCIETY OF BRITISH ARTISTS.

CONSPICUOUS among the pictures in the large room of the Suffolk Street Galleries is the work of the president, Wyke Bayliss, "The After-Glow in St. Peter's, Rome" (241). It is a grand central perspective looking up the nave of the great basilica. Gloom has settled over the interior; the reflecting surfaces of marble in floor and arcade impart a solemnity, heightened by the light under the dome, which throws into relief the high altar and baldacchino. The architectural details are painted with consummate skill, and shows that Mr. Wyke Bayliss is a master of Renaissance no less than of Gothic; the charm and poetry of light and shade have been rendered with all the felicity of his pencil. The interior of Orvieto as seen in the early morning (50) is a noble drawing in water colours; perhaps even more characteristic of Mr. Wyke Bayliss's subtile pencil and dexterous manipulation of iridescent hues. Haynes King has two finished figure studies of girls, "A Fireside Reverie" and "Watching the Kettle," both pretty bits of domestic *genre*. "The Feast of St. John: Finistere" (238) by G. Sherwood Hunter, is a cleverly painted incident—a night procession; the reflection on the faces is happily rendered. This painter's other studies in Brittany, of old fisher-folk at Marken (445), and other Zuyder Zee sketches of domestic life are of interest. Val Davis has a delicately-painted subject, "A Sunny Corner." We notice also W. H. Pike's clever groups of Venetian incident (Nos. 254 and 298), all examples of freedom of drawing; the life and colour of these bright little pictures are excellent. L. C. Henley's figure, "All in a Garden Fair," is graceful. We notice near it a large canvas, "A Cornish Pastoral," by Julius Olsson (264), intensely green and hard. Jas. E. Grace delights us by his delicately-painted woodland studies, "Sunshine and Shade" (268), and "In the Fall of the Year" (418); and in the same tender mood we place Stuart Lloyd's "After Clouds and Sunset," by some quiet river or harbour. "Wells, Norfolk" (276), is one of these pictures—luminous and full of mellow, quiet colour; the dark, sharply-defined houses against the sky, and the reflected lights are very telling, and to the meditative mind, the admirer of the saddening and pensive beauties of landscape, Mr. Lloyd's work is sure to be appreciated, as he knows how to awaken those emotions. The reflected light in John Burr's "Maid of All Work" (283), and the healthful drawing of the tired girl, who has fallen asleep in a chair with her housemaid's brush in hand, is worthy of the artist. Over the fireplace is a bit of charming woodland in delicate colour by Yeend King, "The Last of the Leaves." Adam E. Proctor's "Pastures New" (304) is broadly handled in a nice tone. The view of Durham by V. P. Yglesias (313); "Homeward Bound" (317), by Yeend King; "Glimmering Night," by J. H. Snell (341); Jas. Peel's "Wensleydale" (380); and Albert Kinsley's "Autumn Fading into Age" (392) are a few of the landscapes in which tone, sympathy, and delicate colour are to be found. No student of the sea and the life of the sailor has done more than F. Brangwyn, who in his large and important picture, "We therefore Commit his Body to the Deep" (381), gives us a noble sermon on canvas of the everyday life and hardships of seafaring men. The group of sturdy fellows who are holding the body of their dead comrade while the chaplain reads the burial service, is a master piece of painting. On the foreground of the deck of the large vessel stand two other men watching in respectful reverence the mournful ceremony. The colour is in a rather low key, and the drawing and accessories in good keeping. In Nelson Dawson's strong seascape, "The Sunset Breeze" (374), one is apt to ask whether so light a sky is not reflected in the sea. Mr. Dawson has, it may be, justification for making his sea deep blue. The trawler, and the treatment, and the high horizon are points of note. A further acquisition to the strength of this gallery in sea painting is Edwin Ellis's "Seaside Neighbours" a headland laved by a deep blue sea. Portraiture of the poetic vein is well represented by G. Sheridan Knowles's "Enid" (308), a face suggestive of Tennyson's lines, and his "Desdemona" (316), very reflective and full of expression. Lord Tennyson's portrait by G. F. Watts, R.A., is a valuable addition. Chas. E. Marshall's "Held by a Thread" has a little too much of the picture-dealer's pretty element in it, though the strong light is well managed, and there is much that appeals to the popular mind in the execution; the same remark applies with more force to R. J. Gordon's rather dramatic subject, "A Rehearsal" (399), a lady sumptuously attired in rich old-gold coloured silk with train, practising before her master. Extreme in its contrast to this, but infinitely more powerful in its reality of human life, is the sombre picture of Theodore Cook, "A Subscription Ball" (389), who shows in a dingy back court two or three pairs of girls of the waif and stray class dancing to an organ, to the satisfaction of some poorly-clad people of their own class. As a realistic representation of the lower order the expression of countenance of the girls, their slatternly dress and amusing deportment, Mr. Cook's work is unsurpassed. In the other two rooms we notice a masterly-painted animal subject, by J. S. Noble, "Weary, but Watchful" (426), sheep on a hillside, though less happy than "On the Road to the Tryst" (371), a herd of Highland cattle. No. 438, "Play Up, Surrey," by G. Roller, is a cleverly-painted full-length portrait of a well-known cricketer — its colossal scale spoils it. W. H. Y. Titcomb's clever study of a lady in walking attire, seated against a white fur; the landscape of Jas. Peel (462); and a clever piece of character painting, "Old Chums," by Theodore Cook (478), are noticeable. F. Cayley Robinson's "On a Silver Sea" should be entitled "A Blue Sea"—clever in its shadows and reflections (488). Over the fireplace is a very charming piece of *genre*, "La Fin d'un Rêve" (527), in Dudley Hardy's best style. F. Brangwyn has two very delicate sea studies (524 and 532). A. de Breanski, "Quary Wood" (505); D. Downing's clever study of a sportsman in top-coat, fortifying himself with a glass of hot whisky; R. W. A. Rouse's "The Brow of the Hill," with cattle, though wanting in atmosphere; J. H. Snell's soft and subtly-painted landscapes (519, 545, 561); and the clear afterglow by Leopold Rivers (567), with the capital portrait of M. Phipps Jackson (547), by J. A. Fitzgerald, are the more prominent pictures in oil.

Among the water-colour drawings we must mention the sunlight effect on road in W. Follen Bishop's "Amberley, Sussex" (6), the sketch of "Rye, Sussex," admirable in the evening reflection and drawing of trawlers, by Arch. Webb; "Shoreham Harbour," by F. Hamilton Jackson; Carlton A. Smith's "Blackberry Gatherers" (10), a very dainty piece of drawing and colour; R. B. Nisbet's "Autumn" (14), lacking atmosphere; and some feeling work by Leopold Rivers (19, 65), in which there is excellent tone and clever sky. The intense blue sea and sky in Fred Mayor's "Three Little Breton Maids" (28), is rather staring, but broad in treatment. Harvey Allport has a picturesque sketch of the "Thames at Billingsgate" (34); and Newton Benett (32) a drawing of "Cattle Market, Sandwich." The work of J. M. Bromley in "Coldash Common" (35), "On the Wye" (55), "Old Houses, Yalding," "Changing Leaves" (142), shows the same conscientious delineation and charm of colour that he has hitherto displayed. One admirable sketch of "York Minster," by Ernest George (63), must be noticed. John Fraser has a luminous drawing of "Lynmouth Fishermen," A. W. Weedon's "Marshes, Winchelsea"; Jules Lessore's "Romsey Market Place" (62), a small but broad sketch, with glimpse of Abbey; Stuart Lloyd's clear and clever drawing of "Rye" (71), John Fulwood's exquisite landscape and river meandering (77), A. M. Rossi's touching incident and clever drawing, "Without a Mother" (84), a little boy putting his socks on at the side of his cot, with a dog companion, are all worthy of attention. Nelson Dawson's drawing of rocks (87), and his very clever and large picture of a shipwrecked boat crew endeavouring to attract notice in a rough sea (126), are of high merit. T. B. Hardy also sends a powerful coast-view, stormy sea (153). W. Harding Smith, two clever architectural drawings, "Crypt of St. Zeno, Verona" (190), and "Pilgrims' Steps, Canterbury" (220), in which class we notice a very clever drawing of the apsidal chapels of the church at Brioude, Auvergne, by R. Phené Spiers (144), and F. P. Barraud's careful drawing of the Choir, Chester Cathedral (206). A terracotta panel, in relief "Women at the Sepulchre," by G. Tinworth must be mentioned.

INSTITUTE OF PAINTERS IN OIL COLOURS.

WITH the exception of a few pictures, the walls of the galleries in Piccadilly present a level of rather respectable mediocrity than of boldness. Such strong and vigorous pictures as those of Robert W. Allan R.W.S., John R. Reid, T. Hope McLachlan help to throw into the background the works of painters of the moderate school. To do justice to each work it is necessary that the critic should endeavour to discount those influences of the stronger and more vigorous methods. Taking a few of the more successful works, we must award praise equally to the mild and tenderer subjects, such as those of R. Halfnight in "Cottar's Home," a soft autumnal landscape (1), and the carefully painted domestic incident of C. Burton Barber, "Too Many Cooks" (14); as to the stronger and more robust handling, as seen in Robert W. Allan's "Haymaking" (2), or to the powerful impressionism of T. Hope McLachlan in "Genevieve" (44) and of John R. Reid. Of these latter painters' work we can admire the earnestness and reality, though the method appears hard, and contrary to the tradition of English painting. The darkness and powerful feeling awakened by "Genevieve" (the sainted patroness of Paris as a shepherd (44), the poetic charm in "A Pastoral" (234), and the hillside "On Askham Fell" (244), appeal not to the many. Mr. John R. Reid's genius is of the same order. The landscape, "Posthamel Farm" (27), powerful in its reality, no glamour of sentiment or picturesqueness is thrown over the simple transcript, the colours look hars

and the handling hard; yet a little study suffices to bring out the artist's meaning and intensity of feeling. "Our River" (143) is not a mere pretty piece of painting that may represent anywhere, but a poem in colour, in which there is a meaning. No. 292, "The Sunny Days of Childhood," is veritably a dream in colour, full of strong sunlight; the youth of both sexes along the brink of a river overshadowed by trees, are disporting themselves like children; the girl in strong light seated at the foot of a tree, has not a suggestion of prettiness in her features, but a type of ordinary girlhood among the toilers by the sea. It is in the charm of colour and the richness of the palette, the blending of hues, lights, and shadows, that we see the artist's work. Frank W. Topham, "He Loves Me—He Loves Me Not!" (6) is a pretty but commonplace study—a girl leaning against a stile repeating the old line. "Too Many Cooks," by C. Burton Barber, already mentioned, is prettily conceived in the grouping of child and dogs. There are several landscapes of more or less merit—C. E. Johnson's "Horse Pond" (37), a corner of meadows skirting a lane coming down to a pond, has all the elements of a pleasing landscape, and some carefully-painted trees. More breadth characterises H. Hughes Stanton's "A Peep of the Arun" (43), with its distance of undulating scenery. E. M. Wimperis is strong, as usual. "A Fresh Day" (92), a broad and breezy common, is particularly vigorous and the colour excellent; "Under the Willows" (318), cattle near a brook, is delightfully fresh and natural. Edw. W. Waite, another painter of open commons, has a pleasant study in Surrey, with a stream meandering through. In Yeend King's "Haddon" we feel the only thing desired is to substitute a less intense and more natural green for the foliage, yet it is a charming peep of the old Hall. J. L. Pickering, "Haunted" (76), paints a desolate house surrounded by gaunt, leafless trees. The old, half-timbered mansion is uninhabited, the old entrance-gates off their hinges, and the trees and water have a weird effect; but there is charming poetry and romance in its conception and handling in the semi-gloom of evening. His other contribution, "Eskdale" (606), is a powerful study of rock and bank. Ernest Parton paints in too vivid a key of green—his "Summer Days at Wargrave" (162), is spoilt. He is far more happy in "Summer Days in Sunny France" (488), a broad, shadowless meadow, and his large canvas in the East Gallery (511), the bank of a river, lightened up by lilies in bloom and a cottage. Sea and coast are represented by such master pencils as Edwin Hayes, C. Napier Hemy, and Alfred East. "Off Portsmouth Harbour" (98) is a noble piece of sea-painting, with gleam of sunshine on forts and craft, and its background of rain clouds, worthy of Edwin Hayes. "A Grey Sunset, Brighton" (327), and a powerful sea study, "Tantallon" (523), in the East Gallery, are other pictures by this master of sea form and colour. C. Napier Hemy has a charming picture of "A Cornish Porth" (57) with its rough jetty of rocks and bright reflected light. "Waves in Sunlight" (45), by Harry Quilter, is a study of rocky coast. The sea is intense in its blueness and the work a little too mannered. Alfred East's autumnal picture on Loch Tay (136), and Miss Lily Bristow's sketch at Exmouth Docks (167)—the latter in nice colour; and Geo. Wetherbee's "Sea Idyl" (23) are other subjects. James Orrock in 33 gives us a freshly-painted landscape, and R. W. A. Rouse (91) a clever cloud study with pearly hues and reflection on water of marsh. The most successful picture of domestic *genre* is John H. Bacon's "A Song of Long Ago," a little girl seated at a piano singing to her aged grandmother (111), touching and full of deep pathos. The subdued light and the faces of both old lady and child are tenderly treated, and in good colour. Other figure studies include J. Skelton's "Arrest of Charles Darnay," from Dickens's "Tale of Two Cities" (126); Haynes King's "An Interesting Paragraph" (119); E. H. Horwitz's clever "Consulting an Expert," an old sailor looking at a little boat; and H. M. Livens's "Corner of a Studio" (47), H. R. Steer's "Freedom and Rest" (50). Miss Ethel Wright's end picture, "Whispers" (40), a nymph clad in light pink diaphanous drapery, her head leaning towards a shell held by a cupid—is deliciously handled, though lacking in the attributes of an ideal treatment.

In the central gallery two small oil sketches, by John Fulleylove, of Ely Cathedral, one from the river and the other from Market-place (181, 189), are worth notice. A finished painting by E. Blair Leighton, "His Last Good-bye"—a young man bidding adieu to his sweetheart on the upper landing of a staircase—has grace and careful drawing of costume. In the same category we must place G. G. Kilburne's "Rivals"—two gentlemen in the 18th-century dress-coats, long vests, buckled shoes, and pigtails, in a drawing-room taking tea with a young lady; one, resting his hand on the mantelshelf, is addressing the lady, the other casting his eyes on his rival with surprise and indignation. The workmanship, we need not say, is excellent. In another vein, and of a different station in life, Arthur Hacker paints a touching and pathetic picture of a Scotchman caressing his grandchild, "His Daughter's Bairn." Sad thoughts and tenderness is written on the face of the grandfather, who has his arm round the neck of a fair little girl, and leans the other on a table on which a basin of porridge stands. Mr. Hacker can express sympathetic emotion, his colour, too, is in not too low a key. The president, Sir James D. Linton, still contents himself with *genre* subjects of an unambitious kind. This year he has two small finished figure studies of a girl dressed in pink. "Gathering Apples" (245) and the "Empty Nest" (400) are both skilfully drawn, sharply defined, and in nice colour. Almost photographic minuteness characterises these studies of the president, who has this time not given us the elaborate costumes and accessories of ladies' dress, but a more modest every-day attire. Both studies are simple and pretty. J. Haynes Williams's "Sweet Silence" is also a highly finished picture. A sweet face of a young lady in white satin in last century, short-waisted costume, and an exquisitely dressed beau, who is admiringly looking at her. The painter knows the taste of the public, and what kind of art pays best. F. D. Millet has also a charmingly painted incident, finished with his usual care and refinement, "Michaelmas Daisies" (319); the bowl and flowers behind the embroidery-frame are in exquisite colour, but the incident tells little. T. Gedge Cheeseman's amusing incident "Their Own Particular Hobby," two old picture buyers outside a second-hand stall examining an oil-painting (326), F. Cayley Robinson's "Ferryman's Daughter," strong in colour and reflection under boat (338)—are clever. Frank Walton's "Camp of Refuge" (380), is a charming piece of forest scenery, rather hard. W. H. Pike delights to give us Venetian groups of faces, flowers, and fruit (301, 391); but they are rather patchy. The little domestic subject of John Burr (377), is feelingly painted. We must notice also the excellent heads of Arthur Hacker and J. J. Shannon, each painted by the other (349, 398), and admirably true to life. R. Thorne Waite's "Blackberry Gatherers" (354), Adam Proctor's "Grey Day" (310), John Parker's "Weir, Streatley" (324), W. Padgett's "Village Cross" (169), Mrs. M. Bowden's "Anemones" (201), and works by Alfred Parsons, Hamilton Macullum (496), Joseph Knight, Ed. H. Faber (458), and Miss E. Magnus (394), deserve notice.

Passing to the East Gallery the chief pictures are few. "Lightsome Labour," by J. H. Lorimer, covers more canvas than its subject demands. The group of figures round the sack of potatoes are admirable, and the expression on the faces of the boy and girl clever. Below it, Keeley Halswelle has a charming marsh and rustic bridge, "On the Banks of the Ouse" (473), and his "Early Moonrise, Venice" (572), is a fine piece of pearly-grey cloud and sea-painting. Miss Janet Cowan's "Surrey Village" is charming in colour and broad in touch; John Scott's "Little Bo-Peep" is prettily conceived, but rather hard; John Stock's large picture, "The Release," a bold, glowing composition, but the figure of the disembodied dead out of proportion. Edwin Hayes' large seascape (523) is conspicuous for its fine colour; and the visitor will find much in T. B. Kennington's pathetic and telling scene "Adversity" (557), an oft-told tale of respectable poverty, and F. G. Cotman's large "Sunset." J. J. Shannon's rather meaningless portrait (642) is not worthy of the master, nor the position assigned. There are a few landscapes and figure subjects, such as Jas. Orrock's "Normanton-on-Soar" (645), rather mannered in style; Edmund G. Warren's landscapes, and E. M. Wimperis's freshly-painted "Cottage on the Common," the latter forcible and true to nature. E. Hargett's Sussex view (533) is hard. Adolph Birkenruth's "Amreis Garden" is graceful, poetic in sentiment, and in nice harmony.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE opening meeting of the fifty-seventh session of the Institute was held on Monday evening, when the President, Mr. Alfred Waterhouse, R.A., delivered his inaugural address. Having congratulated the members on the improvements to the Conduit-street premises, carried out during the recess under the direction of Mr. Aston Webb, the honorary secretary, he mentioned that Miss Hannah Jones (the last surviving sister of the late Owen Jones), who died in September last, had bequeathed the residue of her estate, amounting to about £2,000, as an additional endowment to the Travelling Studentship she founded some years since as a memorial of her distinguished brother. The President continued:—Since the commencement of last session the new system of progressive examinations has come into operation. Two preliminary examinations for candidates qualifying as "probationers" have been held in various centres, 169 students presenting themselves; of these, 62 have been declared exempt, and 77 have passed the examination, making a total of 139 who are qualified in due time to come up for the intermediate examination, which will be held for the first time this month. In addition, 54 gentlemen have passed the qualifying examination in architecture, entitling them to become candidates for Associateship. If a man is to take a creditable position as an architect in the future, he must begin by passing these examinations. It seems to me as essential at the present day to have passed them as it was in former years to have spent a certain period in an architect's office as a pupil. I do not say that both courses are not still desirable, even necessary; but it will soon be found that the passing of these examinations is a *sine quâ non*. I would draw attention to a memorial from our colleagues in Edinburgh to H.M. Commissioners for the Scottish Universities, recommending the establishment of a curriculum in architecture at the University of Edinburgh, and the institution of a degree or other university distinction for those who have successfully pursued it. In my last address I animadverted on the impropriety of expecting builders competing for the execution of contracts to verify the correctness of the quantities on which they tender—a practice adhered to by H.M. Office of Works after it had been discontinued by London architects generally. This led to your Council addressing H.M. Commissioners

of Works on the subject, and brought a speedy reply to the effect that the practice would be discontinued. It is to be hoped that the high example thus set will be followed by those bodies in the provinces who may still adhere to what we cannot but consider an objectionable practice, not justified by equity, and calculated to bring the functions of the quantity surveyor into disrepute. We have received two deputations from several of the building trades, inviting us to use our influence for the insertion of certain clauses into our Heads of Builder's Contract—1st, to prevent the subletting of any portion of the work; 2ndly, that all labour employed by the contractor should be of the best quality; and, 3rdly, that the contractor should not pay less than the recognised or trades-union rate of wages, and should observe all recognised rules or customs as to working hours. The Council did not see its way to take any collective action in the matter. Among the subjects which have engaged our earnest attention during the past session, none is of more importance than the revision of the Acts which affect building operations in the Metropolis. The general public may view the subject with apathy, as not understanding how vitally it affects its comfort, health, and well being; in fact, the very magistrate on whom devolves the administration of the said Acts in cases of dispute is said to hate the sight of the district surveyor when he brings his unfathomable technicalities into court. A paper on "Building Legislation," read in this room by Mr. John Slater, in February last, was the theme of, and prelude to, two very interesting and important discussions, and to correspondence conducted by specialists in this matter. Those who took part in them agreed almost unanimously that the time has at length arrived for the codification and thorough amendment and simplification of the some fifteen or twenty Acts and amendments of the same which now regulate building operations in the Metropolis. A warning voice, however, that of Professor Aitchison, was raised against our striving after perfection, by making the cost of houses too great for those who are to live in them. Others objected to building regulations being too definite, so as in some cases to become tyrannical and absurd; but it seems to me that because an existing definition may be found to work in this way in practice—as, for instance, the clause in the Act which limits the sum of the openings in a wall to half its total area—it is a reason for the amendment of the clause rather than for its exclusion. The fault lies not with being too definite, but with the definition not being broad enough to meet varying contingencies. The Act of 1855, having been framed chiefly for preventing the spread of fire from one combustible wooden-floored building to another, is out of touch with improved fireproof construction, which ought, when properly applied, to allow of an increase in the cubic contents of buildings beyond the area now prescribed, at least where the building does not contain goods of an inflammable description. The Act does not allow for the increased amount of glass called for by the ever-growing pollution of our atmosphere; and, on the other hand, does not make due provision against the danger from fire incident to the use of lifts. It does not realise our greatly extended requirements in the present day; nor our extended building knowledge—our knowledge, for instance, of the treacherous nature of stone and iron in case of fire. The Act does not deal with important questions affecting the rights and obligations of adjoining owners; it does not concern itself, except by implication, with the underpinning of party-walls and of adjoining structures in cases where the new structure, going below the old one, affects the safety of the latter, and involves such a procedure. It ignores sanitation, and does not trouble itself about the formation of new building estates, where, of course, the evils we have most to deplore in our streets and thoroughfares can be most readily prevented. Mr. Slater urges, with reason, the necessity of either making our Building Acts of the future sufficiently expansive to meet such cases, or of giving our district surveyors a discretionary power to enable them to deal with special cases in a practical way. Probably his first alternative would present, in practice, the fewest difficulties. The urgency of this subject has been pressed upon us lately by the London Council (General Powers) Bill, which appearing at first as if it chiefly related to a bridge at Barking Creek, and the acquisition of a new park for South London, was in reality of much more widespread interest. It proposed, in fact, important amendments in the Metropolitan building regulations, some of which could not be looked upon with favour. A memorial was thereupon addressed by your Council to the London County Council on the subject. We pointed out that many of the changes proposed were of temporary expediency, and many wanted further consideration, as, for instance, those clauses affecting sites at the corner of two streets, in one of which the line of frontage had to be set back, where the owner of the corner site would have had to set back also without compensation; and those affecting the heights of new buildings. We further pointed out the desirability, when an application was refused, of the grounds of the objection being stated, so as to enable the applicant to amend his designs to meet such objection. We also remonstrated against this indirect mode of introducing legislation seriously affecting private rights and questions of principle, and urged the advantage of promoting a thorough amendment and consolidation of the Metropolitan building regulations. Some of these recommendations were accepted by the County Council, and their Bill was amended accordingly. One of the most important provisions of this new Act is the establishment of a Court of Appeal in questions of frontage, &c. The Court is to consist of three members—one appointed by the London County Council, one by your Council, and another by that of the Surveyors' Institution. The County Council deserves praise for its initiation of this reform—or rather this revival, under fresh conditions, of a tribunal established by the Act of 1844, but which, from its peculiar constitution, became a dead letter, and I sincerely hope it will work so well in practice as to show the propriety of giving to such Courts greatly extended powers in the future. The Act also fixes for the first time in London a limit to the height of new buildings not being the rebuilding of existing structures of a greater height. Ninety feet is the limit, exclusive of two stories in the roof, and of exceptional features, such as ornamental towers or turrets and dormers. This should satisfy even the most aspiring among us; if it does not, there is still the right of appeal to the tribunal before referred to. Having thanked Mr. Arthur Cates and Mr. E. T. Hall for the part taken in criticising and improving the Bill, Mr. Waterhouse continued: Even were we to get the most perfect Building Act for the regulation of our practice, it should be the function of someone—or rather of some collective body—to take a broad artistic view of that immense chaos called London; and, as opportunities arise, to point out in what way it can be improved as a work of art. The members composing such a body must be men of business as well as artists, or their recommendations would soon cease to have any practical value. In laying down the line of a new street, it would be their duty to see that its extremities either ended in some existing building worthy of closing the vista—as, for instance, the Strand, in the Church of St. Mary; or that a site was reserved for some future erection with that object in view. It would be their duty to see that the best sites along its course were reserved for buildings of a character becoming their position, and that a flagrant want of harmony was not suffered in contiguous elevations; and while always dealing indulgently with such as were modest and refined, the tribunal would be resolute in refusing the acceptance of designs of vulgar ostentation—creations of the nightmare school, of which, unhappily, we have examples already thrust upon us. Indeed, we may have more if there be no authority to check this worst form of inflated advertisement—the worst because it involves the prostitution of a noble art, and, when once erected, is not easily got rid of. I am not forgetful of Professor Kerr's pathetic inquiry, "If Heaven has made us Philistines, how can we help it?" But this, as it seems to me, is hardly a question of a man's right to do what he will with his own, provided he does not injure his neighbour. A street is public property, made not only for the use, but for the enjoyment, of the public, and it cannot be an enjoyment so long as it is vulgar or monotonous and ugly. I plead for the creation of some responsible body of men, by position, education, and cultivated taste specially fitted for the task, whose main duty should consist in advising upon and controlling, from an artistic point of view, those works on which the future of London so much depends. An architectural council, to be appointed by the Government, and to be partly composed of professional men, is wanted in London. I plead, moreover, for the public exhibition of the plans of all Metropolitan improvements prior to any final decision being taken upon them. Such a course would tend to create an intelligent interest in improvements which at present does not exist in London, and it would enable those who have to pay for them to consider in time if the proposals be good, practically and æsthetically, or otherwise. We have obtained a tribunal before which certain Metropolitan building cases will be tried, and if success attend the labours of this tribunal, other and perhaps more important matters relating to building may be referred to its judgment. So far so good. But more is wanted, namely, an architectural council for national works, which should also be intrusted with the consideration of proposed improvements, and of all those questions on which the future of London so much depends. The system recently inaugurated of publishing criticisms on the work of students for our various scholarships and prizes is one of great value. It shows the unsuccessful student wherein he has failed, and so guides him to a better chance of success in the future, pointing out even to the winners how to attain greater excellence, if willing to listen to the friendly advice of experience. With reference to the work of those to whom travelling studentships are awarded, what we should like to see is not mere evidence of their industry—that is seldom wanting—but a greater desire to make quality, apart from draughtsmanship, and not mere quantity, their aim. There should be among our students a little more of the thoroughness which characterises the work of the French students, whose magnificent studies displayed in the Galerie Rapp, in last year's Exposition, so much impressed those of us who had the opportunity of examining them. I say "a little more," because in France, perhaps, this work is carried out with too great elaboration. Still, I would have our students make themselves so conversant with any work they analyse as to be able to pass an examination on its construction and features; and it would be well if the knowledge thus previously acquired by the candidate in the study and delineation of some ancient example were put to the test in our examinations more strictly than appears to be the case. If the architect-student knew that it was not by the mere number and beauty of his sketches, and by the accuracy of his measured drawings of old edifices, that he would satisfy those who had sent him forth on his travels, but by the proofs he was able to afford that he had absorbed and digested what he had seen, our studentwork would sometimes be more thorough, and the men themselves in some cases would be the more ready designers after having had such preparation. Having got the ancient examples into their heads, instead of merely into their sketchbooks, they would learn to lean not on illustrations and other extraneous help, but on what had become a part of themselves, and so prove not mere copyists, but self-reliant and original designers. If such careful analysis of a single example of architecture is recommended to the student, it is highly important that he should know beforehand what buildings will best repay the time thus devoted to them; and it would be a work of very great interest and utility if those best qualified for the task were to catalogue such buildings, giving their date and most noteworthy features and characteristics, not disdaining to mention also their distance from the nearest railway station, and the existence and name of the neighbouring inn, if any. The student should be encouraged to go where he could study good architecture rather than redundant and often misapplied elaboration. A question is often asked as to the best mode of training a youth intended for the profession of architecture. How should the early days of one who intends to study architecture as a calling be spent to the best advantage? To such I reply: He should have received in his schooldays some preliminary training of a scientific as well as of an artistic character. He should learn early to understand and appreciate the beauties of a fine building—of the civic and domestic edifices, the grand cathedrals and churches, the noble streets and open spaces, with which many a city in this country is endowed. He should be taken to museums of "comparative sculpture" such as the initiative of Violet-le-Duc created in the Trocadero, and, in default of similarly arranged educational institutions at home, to the sculpture

galleries of the British and the South Kensington Museums. In fine, he should, in his early, pliable days, be shown the works—or casts or drawings of the works—of the great architects of various countries, and thereby acquire an insight into the magnitude, the nobility of the career upon which he is about to enter. At the same time, his ordinary education should not be neglected. He must pass the matriculation examination of a university, or the local examination conducted under the authority of a university, or he must obtain some testimonials of proficiency granted by well-known educational bodies. Then, armed with such letters of introduction, he should come to the Royal Institute of British Architects, where he will be cordially received; and thereupon, after the necessary inquiries as to his certificates and after examination of his powers of draughtmanship, he will be admitted a probationer. His next proceeding is to be articled, say for three years, to some practising architect on the conditions suggested in the form of articles which has recently been published, a most important item of which states that "with the object of enabling the pupil to qualify himself for passing the examinations for students and Associateship of the Royal Institute of British Architects, he, the principal, shall and will allow the pupil such absence as he, the principal, shall deem reasonable for the purpose of attending lectures, classes of instruction, and the said examinations." During the term of his articles the pupil, or rather the probationer to whom I am alluding, will have to prepare the "testimonies of study," which he has to submit to the Board of Examiners before he can be admitted to the intermediate examination; and to assist him in the preparation of these "testimonies" in London he will, if properly advised, become a member of the Architectural Association, attend its classes, periodical visits to buildings, &c., and thus mix with others engaged in a similar course of study. During all this period the Reference Library of the Institute is open to him, and he can borrow books not only from the Lending Library of the Association, but also from that of the Institute. At the end of his articles he passes the intermediate examination, is qualified as a student of the Royal Institute of British Architects, and his name and address are inserted in the register of members of the Institute, and published in our Kalendar. He afterwards competes for the prizes offered by the Association, and then for those offered by the Institute. He gains a prize, perhaps a studentship, which enables him to travel in France or Italy, or even as far as Greece. He returns to England, enters an office as assistant, prepares his probationary work for the final examination to qualify for candidature as Associate; he passes the examination and is registered Associate. I confess that this record of the younger days of an architectural student seems to me a fairly complete one. No President of this Institute, forty or even twenty years ago, could have told a similar tale. Possibly, in a not distant future, we may find it better to use a course of instruction somewhat analogous, let us say, to that pursued by Professor Ware in New York, as a preparation for entering an architect's office, than that theoretical instruction of the sort just indicated should go on *pari passu* with pupilage. For a pupil to reap the full benefit of his time in an office, he should as soon as possible find himself set to practical work, and work of this sort in a busy age can hardly wait for one who spends a considerable portion of his time in abstract study; indeed, this term of pupilage might be greatly shortened were it to follow rather than be contemporaneous with theoretic training. For many years the professional education of our pupils has been assisted by the well-directed efforts of the Architectural Association. Its method consists in the members helping themselves and each other; and no better could be devised. The general committee of the Association recently formulated a systematic course of instruction to meet the requirements of the Institute examinations, the programme of which course was to include the study of the principles of design and construction on the drawing-board in class. This more complete system of instruction was not, however, adopted by the general body of members of the Association, and the inauguration of the scheme has been postponed. I reiterate what I said last year, that the Institute should, if the way be made clear, give substantial help to those who, during a long and prosperous period, have shown an earnest determination to help themselves. But how or in what manner this helping hand should be offered to the junior body—how it would be received, or whether it would be taken at all—are points which do not appear to have received due consideration from those most concerned. Are we to indirectly support the Architectural Association, when it has made up its mind as to what it would like to accomplish in the way of teaching, and when it asks the Institute for aid? Or are we to set on foot some corporate machinery of our own for the systematic instruction of those members of the Association and others who are studying to pass the progressive examinations of the Institute? These are vital questions, which demand our most serious attention; and I will attempt to lay before you a short statement of facts relating to them. At present the educational work done by the Association does not appear to afford any great material assistance to the Institute. The Association numbers 1,129 members, of whom 276 are also members of the Institute, and 40 more are probationers of the Institute. The total number of our probationers is already 164, and of these only 40 are members of the Architectural Association. One thing therefore seems to me certain: the relative position of the junior and senior bodies of our profession in the matter of recruits has undergone, or at least is undergoing, a great and sensible change. The Institute has emerged from the state of a dilettante society into one of an eminently business-like kind, with recognised functions of a public as well as professional character. The Architectural Association, on its own showing, does not appear to possess at present the means to adequately fulfil the functions of a teaching body. Such being the case, it behoves us to look the new aspect of our relative positions in the face, in a business-like way. The general committee and the subordinate committees of the Architectural Association are largely, if not mainly, composed of members of the Institute, and the instructors in most of the classes are members. The Association holds its general meetings in the Institute rooms; when its honorary secretaries apply for the use of a room in which to hold a class, the Institute lends one. Every member of the Association under twenty-three years of age has the use of both the reference and lending libraries of the Institute; and any member over that age, if he asks permission, is allowed the use of the Institute library, which, as a matter of fact, is open all the year round to every architectural student properly recommended. The President or a representative of the Association has a seat at the council table of the Institute; in fact, it has the right to be there represented. The actual connection between the junior and senior bodies is much closer, much more intimate, than the majority of those who talk about the subject are aware; and the Institute has never seen cause to regret the closeness of that connection. It sees with interest and approval that the Association is asking itself the pertinent question whether the facilities it affords to students desirous of working in its classes are sufficient for the requirements of the time, and whether several things which involve considerable outlay of Association funds might not with advantage be abandoned with a view to augmenting the sum available for teaching purposes. At the present moment, in spite of the close connection which exists between the Institute and the Association, in spite of the fact that we both inhabit the same building, the two bodies maintain two distinct libraries and two distinct registers of architects' assistants; the two bodies publish two distinct Kalendars and two distinct Journals. Now, though fully alive to the advantages of healthy competition, especially to the young and aspiring, I question the utility of thus doubling our labours, if not our expenses; and from a business point of view alone, I venture to urge upon the members of the Association the desirability of considering, in conjunction with the Institute, the present duplication of our expenditure and consequent division or diminution of our forces. If I may be allowed to make a personal suggestion, I should say, let us join, not divide, our forces, and in such a manner that, while maintaining the autonomy of each body, the Association might devote its funds more exclusively to teaching purposes. We already house the Association for its general meetings; why should we not house its library, leaving the administration of the same to its honorary officers? Why should we not combine the two registers of assistants in one, to be kept in the office of the Institute by a clerk who should also answer the many and often unheeded applications that are made on the subject of the Association, its membership, its classes, &c.? Why should we not include the "A.A. Brown Book" in our annual calendar? Here, at least, are points which a joint committee of the two bodies might well consider, and in suggesting them I do so on my own personal responsibility; and, further, I have no thought or wish to see the two bodies, senior and junior, welded into one. On the contrary, any such amalgamation is impossible under the present constitution of the Institute; and, even were it possible, it is not, in my opinion, desirable in the interests of either the Institute or the Association. Having referred to the excellence of the lectures read before the Association and to the "Arts and Crafts" Association, who are, Mr. Waterhouse thinks, doing work which ought to have been done by the Royal Academy, the President added:—M. Lucien Magne, who, like his late father, is an architect practising in Paris, has recently written a criticism of the British architectural drawings exhibited last year in Paris. He thinks that our works are distinguished by their quality of picturesque composition, but they lack, he says, that original note which is the result of the proper appropriation of details and profiles to the desired effects of light and shade. Modern English architecture is of particular interest to our French confrère, in that it does not appear to be the expression of conventional teaching; but, on the contrary, a manifestation of particular wants. In the irregularity of plan, in the determination to give to each part of the façade a form resulting from the destination of each room within, M. Magne sees a reminiscence of the traditions of our art in the Middle Ages and the Early Renaissance. He then goes on to compare the design for the Imperial Institute with the majority of the compositions of the Pensionnaires de Rome, and says that in it Mr. Collcutt displays a liberty and boldness in his disposition of masses, an elegance in treating the silhouette of his building, which are not often to be found in the contemporary work of French architects. Such praise, coming from such a pen, is, of course, very gratifying to us; but it contains also a note of warning against the dangers attendant on the established teaching of architecture not as a science but as an art. I hope we may lay to heart the true lesson which our French confrère would instil—not to lose our freedom and liberty in design by reviving the formulas of an architectural education conducted everywhere on the same lines. I do not think there is at present any danger of this. The exercise of our liberty grows with what it feeds on; indeed, it seems to tend in many cases to licence: and there are modern buildings in this country which display in their details a recklessness of what thoughtful men, with ordinary reasoning power, consider appropriate. One of the dangers to be dreaded in alluding to contemporary work is that it may not have been my good fortune to have seen some of the best and most characteristic specimens of it, and that, therefore, mention of them may be unintentionally omitted. Speaking generally, I cannot help noticing a curious tendency in the work of some of the most esteemed of my contemporaries: the introduction in the same building of parts avowedly made to look as if designed by different people in different ages. We rightly appreciate the charm which is given to old buildings by the work of successive generations. The craze for the destruction of everything not of the original period of a building's history in its restoration has now happily passed away, and we are zealous to preserve the history written in the stones of our buildings as we find it, if there is no imperative reason for its removal. But surely that is a different thing from constructing fictitious history. If we cannot help being eclectic in some sort, ought we not at least to try to produce a harmony in our work, and leave it for others who shall come after us to introduce other styles and modes of detail? I feel it the more incumbent on me to say so, as having myself spontaneously sinned in this respect in my youth, and once or twice latterly at the instance of clients, who frequently, without due consideration to harmony and fitness, insist on the repetition of forms and details which have pleased them elsewhere. The tendency of our work in this country at present is unquestionably towards smallness of parts: we

strive for the picturesque rather than for grandeur, and lose much thereby. As an instance of a reaction against this tendency, I would venture to speak of Mr. Sedding's Sloane-street Church, with its two fine campanili, its magnificent windows, and its nave wider than that of St. Paul's Cathedral—in fact, to the unusual aspect of breadth and space which he has imparted to the structural parts of this fine work. Another instance of the dignity begotten of a broad and simple treatment, in the hands of a master like Mr. Norman Shaw, is the new central home of the Metropolitan Police. It is a building which forces itself on the attention, and gives pleasure in no ordinary way, however much the critics among us may think they could improve it in a detail here and there. Mr. Pearson is to be congratulated on the magnificent effect of his new front to the north transept of Westminster Abbey. I am told it is nearly line for line what was there before, and yet the impression produced is very different. This difference arises not merely from the newness of the stone, but from a certain artistic piquancy and 13th-century flavour about it which the poor pared-down and sadly mutilated old skin certainly did not possess. The Royal Commission on Westminster Abbey, convened to consider the building's capacity for further interments and monuments to the most illustrious of her Majesty's subjects, has not yet reported progress; but I may here mention, as the inquiry has been a public one, that though there is room in the Abbey for some eighty more interments, there seems to be no more space for monuments without doing still further damage to it in the future than has been done so ruthlessly in the past. The objection to the removal or rearrangement of any of the monuments, however destructive to the general appearance of the interior of the Abbey, or revolting to the taste of the day, seems insuperable in the present state of public opinion, and under these circumstances various schemes for erecting a memorial chapel within the precincts of the Abbey have been laid before the Commission, and duly considered. They will shortly be reported upon. Unanimity, however, on such a subject is not to be expected. I have been invited to say something about the painted decoration of St. Paul's. If I have hesitated to do this, it is chiefly because I do not know enough about the intentions of those who have charge of the work. The painting of the stonework near the reredos is at present obviously incomplete, and so it is impossible to judge of its ultimate effect; but few have shown themselves better fitted, by what they have done elsewhere, than Messrs. Bodley and Garner to advise in such a question. It is certain that Sir Christopher Wren painted in oil paint the walls of the nave and nave-aisles, and therefore some may say we have his authority for painting them again. It will hardly be questioned, however, that one of his motives for doing so was to avoid a worse evil: the disintegration of some of the stonework of the interior from damp. This seems to have been the case at the west end of the church; in the choir distemper was used, which seems to indicate that paint having been resorted to in part of the church, it was found necessary to bring the rest of the fabric into harmony with the painted part. When the cathedral was warmed with hot water, the coating of paint was no longer necessary as a preservative, and so it was removed and the colour wash removed with it. The stone has now a charming variety of tone, heightened in places with the white mortar in its pointing, and it is a very grave question whether we shall ever get any painted decoration as satisfying as, or approaching in dignity and solemnity to, what we have now in the warm and varied tones of the masonry, smoke-begrimed and dingy though they are. Whatever may be thought of its sculpture, mounted on a red marble background, and relieved by partial gilding, the reredos appears to me in its architectural portions to be a work worthy of its surroundings; but I am very jealous of its being treated as the keynote for the whole cathedral in point of colour, and should be inclined to question the advisability of any scheme of decoration which, in order to secure harmony throughout the whole building, would involve the repainting of the walls generally. If such renovation be determined upon, where is it to stop? Can it stop short of the western doorways? I am bound to admit, however, that the great architect of the building suggested such a treatment by what he himself did in its eastern extremity; though he perhaps here allowed himself, in the obscurity of the apse, a strength and contrast of colour which he may have felt would destroy the unity of the interior if carried down the choir and nave. On the other hand, were the plasterer's work in the vaulting relieved with gilding, the effect might be very charming, and without injury to the harmony of the interior. I feel it a delicate task to criticise what very likely I do not understand in all its bearings; but I am very sure of this: that we as architects do not look upon the work going on in St. Paul's with apathy, but are, on the contrary, keenly alive to its importance, and are most anxious that nothing should be done to destroy the dignity and unity of what is perhaps the grandest Renaissance monument in Christendom. The increasing attention paid to the use of faïence for internal decoration is a matter of much importance in our dirty atmosphere. It enables the architect to insure that his more important apartments shall remain as he designed them. Most of us who have had long experience as practising architects must have been occasionally disconcerted in discovering that some interior which depended greatly on its harmony of colour, and which we may have thought more or less a success when it left our hands, had been handed over when in need of repainting to "the tender mercies of some decorator, who, failing to appreciate the delicate scheme of colour upon which we had prided ourselves, or perhaps wishing to make his speciality more pronounced at the expense of the architecture of the room, had sown discord and vulgarity broadcast over our creation. Now, the use of faïence would put a stop to all this. If well applied—the forms specially designed, the colours, too, carefully studied, and violent contrast avoided—faïence offers to the architect a new and interesting field for permanent decoration. It seems almost impossible to be too careful in the juxtaposition of varied tints, as they look so much more violent in a building than when put side by side in the workshop. As an instance of the successful treatment of a ceiling in this material, I may instance that of the Union Discount Company in Cornhill, just completed from the designs of Mr. MacVicar Anderson. It is a matter of sincere regret that a few of our most distinguished brother architects who are not members of our body look upon the Institute with apparent indifference and distrust. That certain names are not to be found among our list of members is a grief to me. I cannot, of course, say that they would confer any benefits upon themselves by joining us, except the benefit that all must derive from united action for a good and worthy object. None of the architects whose absence from our body I deplore would dream of doing anything which our by-laws forbid us to do. It is not, therefore, the dread of losing the complete liberty of action we all hold so highly which prevents their joining us. I trust we shall never give up the hope of seeing them within our ranks, never let them feel that their presence here would be anything but most welcome, and an encouragement to us to persevere in our endeavours to make the Institute the worthy upholder of our art. The dignity, the greatness of our profession arises from its responsibilities; and in this it differs from all other artistic vocations. The painter has only to please himself in the subject, the inception, and execution of his work. If, when finished, it is thoroughly successful work, in all likelihood it will find a purchaser. The architect, on the other hand, can find nothing to do, can give no satisfactory proof of his capacity until somebody comes to him who is willing to trust him. Consider what that trust is. Not only is he intrusted with the expenditure of large sums of money, but of money expended in such a way as to affect the comfort, the happiness, often the whole tone of the existence, of those who employ him. The client who employs a worthless and incompetent architect not merely throws his money away; he has to endure a far heavier misfortune. He has to live the rest of his days in a house, or worship in a church, or conduct his business in an office or a bank, which he would willingly erase from the face of the earth if he saw his way to such a termination to his disappointment. But practically his annoyance cannot so be put an end to. If the building he has commissioned be ugly, ill-contrived, and badly executed, so it must remain—a constant source of trouble to himself, of derision to his friends and the public. We have, therefore, to show ourselves worthy in every way to be trusted. We have to be sympathetic, putting ourselves, so far as we can, into the circumstances of our clients—not leading them into unexpected expenditure, not, on the other hand, following their whims if our greater knowledge and experience tell us plainly that such a course will lead to disappointment. The architect, therefore, has to be not only an artist and a skilled constructor, but he must learn to appreciate the value of other people's money; he must be considerate, honest, patient, firm; and, above all, he must learn in imagination to put himself in the place of his clients, so as to understand their desires. If he were all this, we should hear little of complaint against the profession. We should be respected as we respect ourselves, each other, and our art, which ought to be to us the first consideration, entirely irrespective of material reward.

Professor Kerr, in moving a vote of thanks to the President, observed that the address to which they had just listened was a practical, commonsense discourse, going to the heart of everyone present, whether artist or man of business. It was so peculiarly discursive that it was difficult to take up any one point for comment. The President had referred to a haphazard remark dropped by the speaker on the Philistinism of the age; but he would point out that what he (Professor Kerr) said was not that architects were Philistines, but that they must endeavour to improve and ameliorate the Philistinism of the general public. The Government always assumed a Philistine attitude towards art, and was not likely to alter; but the present tendency of the public mind was unquestionably towards an improved artistic feeling. He believed that under the Anglo-Saxon flag a distinctly artistic nation was destined to arise.

Mr. William White, F.S.A., seconded the motion, which was put to the meeting by Mr. MacVicar Anderson, and carried by acclamation.

NATIONAL ART CONGRESS AT BIRMINGHAM.

During the present week the third annual meeting of the National Association for the Advancement of Art is being held in Birmingham. The opening meeting took place at the Midland Institute on Tuesday evening, when a Presidential address was delivered by Mr. J. E. Hodgson, R.A. While no institution or system of education could produce genius, we could provide a fitting reception for it, so that when a man of genius appeared he should have scope to develop himself, and should not languish for want of employment. The subject selected for this year's consideration by the Conference was that of Art Education. As the boundaries of human knowledge had been extended, education must be specialised, and this told disastrously on art, which admitted of no specialising. The range of art, like that of science, had extended, and the conditions under which it was practised had become much more complex. Education, therefore, had become more difficult in a corresponding way. When we turned to art as applied to industrial and decorative purposes we came to a state of things even still more complex. The Congress was seeking to educate public taste, to spread abroad a desire for what was beautiful, to bring together artists and workmen, and to clear away the dead load of indifference, of ignorance, and perverted taste which had been permitted to overwhelm this and almost every other country in Europe. In his address to the section of Museums and and Industrial Art, Mr. Philip Rathbone, the President, alluded to the educational value of stately municipal buildings, remarking that the town halls of Birmingham or Brussels made a man prouder of being a citizen of one of those cities than the knowledge that it contained so many hundred thousand inhabitants. He insisted on the intimate relation that ought to subsist betweeen sculpture and architecture, and satirised the want of intimate association or relation between our public statues and the buildings they faced.

Mr. J. Thackray Bunce followed with an address on the "Encouragement of Art by Municipalities."

Mr. Selwyn Image read a paper on "Colour in Relation to Internal Decoration." Along with our return of interest in embroidery, he said, sprang up what was really a mania for old china and pottery; and, as we covered every chair, couch, table, curtain, and screen in our houses with "art needlework," so the walls were hung over with plates, the mantelpieces and shelves

were crowded with pots. A dwelling-room, it should be remembered, is not a museum, and as with an undue display of needlework we sometimes make our houses too vividly recall a bazaar, so sometimes we make them too vividly recall a museum with our blue china and lustre ware.

Mr. Brett, A.R.A, suggested that having stained glass in windows monopolised all the colour in decoration.

Mr. T. G. Jackson considered that everything in a room should be useful. In houses furnished on artistic principles they too often found this overlooked. There was nothing so uncomfortable to sit upon as the chairs and sofas sold by certain art establishments.

Mr. Ralph Nevill, F.S.A., read a paper on "The Study of Local Architecture, especially by Schools of Art." He called special attention to the importance of the study of actual buildings as they exist instead of fine drawings and book-case architecture. To suggest the importance of a closer and more systematic study, he urged, is by no means unnecessary. In these days, when so many illustrations of buildings are published, it is tempting to copy the style of some well-known architect, without going through the training and acquiring the thorough knowledge that he has. The ordinary modern building shows no sign of any close study of the delightful old stone mullioned windows and gables of a stone country. The William of Orange, Anne, and earlier George periods all furnish abundant examples of good metal-work which should serve as examples to manufacturers of Birmingham. Yet every architect knows to his cost the immense trouble to get any of the humbler articles of such pattern as shall be at least tolerable. Take, for instance, iron casement furniture, and compare the old patterns with their graceful curves and turns, and the extremely common things that are thought good enough for even expensive fittings of to-day.

In the discussion afterwards, Mr. E. R. Taylor, the head master of the Birmingham Art Schools, suggested that defective art training had some-to do with the poverty of modern architecture in the local art schools. It was among the students who could draw only with a T-square that the architect's pupils were found.

On Wednesday, Mr. T. Graham Jackson, the President of the Architectural Section, delivered his address, his topic being "Architectural Education." Highly as he rated the system of apprenticeship, it was clear to him that the pupil would not find in it all he wanted. He would see in his master's office only the kind of work that happened to be going on, and would have to supplement it by private study. To practical studies the architect must add that which was to make him an artist, and to that end he had to take into consideration not only the current art of the day, but that of the past. Art had its literary and historical side, and he would have to study that independently of the work of the office, by reading and by visiting ancient buildings. Sketching must always form a principal part of an architect's education. Mechanical drawing formed a large part of an architect's work, and neat geometrical draughtsmanship up to a certain point had its use; but often a great deal too much stress was laid upon it. Supposing the would-be architect to have acquired a fair knowledge of practical construction, of the mode of making drawings for workmen to work from, and some skill in freehand drawing, Mr. Jackson would have him during his pupilage, or at the end of it, pass a few months under a clerk of works at some building —best of all on one for which he had been making drawings in the office, so that he might see how his own work on paper looked when realised in stone or wood. It was in that *rapprochement* of architecture to the handicrafts—of the architect to the craftsman—that he saw the only opening by which they were likely to make any sensible progress. Happily, the day had gone by when the architect's work was supposed to begin and end with the bricklaying, the carpentry, and the drains. The architect of to-day was expected to be able to design everything, from the building itself down to its furniture, and to work in all kinds of materials, from marble to stone, from stone to wood, and from wood to iron. He must understand colour as well as form, and be able to design not only the carving on his walls, but the needlework of the hangings, the wrought-ironwork of the gates and screens and railings, and all the metalwork down to the hinges, locks, handles, and finger-plates of his doors. But in order to design successfully in so many handicrafts it was necessary he should understand the technical difficulties and the possibilities of every one of them. The cry of the day among artists was the solidarity of art, the kinship of architecture, painting, and sculpture, as three modes of saying the same thing—three vehicles of artistic expression that ought never to have been forced asunder, and could not thrive apart. It was the healthiest sign of the day that that intercommunion of the arts and artists was gaining ground, and that the number of men was increasing who could design not only the building, but also its decoration, and not only the decoration, but also the building itself. The education by which he would have young architects trained for their work, was not one that began and ended on the office stool on which he perched as a pupil, and with mastering the principles of construction as explained in books and drawings, but one supplemented by reading, by sketching, by thinking, by following his work into the workshop or to the building, by constant communion with other artists, by learning to model, and, above all, to draw the figure from casts and from life, as the root and key of all decorative design and the centre of all art education.

Mr. Reginald T. Blomfield, in a paper on "Architect and Artist," roughly classified architects as the practitioner, the practical man, and the exploiter, or the man with the ghost. Architects failed in two ways—in attainment, and in their attitude towards their work. The architect who put his work out, and the artist who drew each line himself and made and remade his designs till they satisfied his own ideal, and spent days in modelling and in watching the modelling of his work—each received his 5 per cent., and the public was equally indifferent to them both. But the man who spent all that extra time and trouble was at least an artist. If an architect claimed to be an artist he must realise his responsibilities, recognise the fact that about half his work would be a labour of love to him and his own reward; and he ought to be prepared to make those sacrifices as a matter of course, or else acquiesce in his proper position as a business man or tradesman.

In a paper on "Education in Art," Mr. J. Brett, A.R.A., laid down the following three propositions:—1. That technical education, in the sense of practical training by artists, is not necessary; 2. That it has done more harm than good; and 3. That it cannot now be had. His severe strictures upon the art methods adopted by the Dutch and Modern French Schools, notably on Hobbema and Vandevelde in the former school, and Millet in the latter, gave rise to an animated discussion. The portrayal of "Modern Life in Art" was defended by Mr. Stanhope A. Forbes; "The Present State of English Water-Colour Painting" was regarded from a pessimist standpoint by Mr. W. J. Wainwright; while at a combined meeting of sections B, C, D, and E, an amusing paper on "Advertisements as a Field for Design" was read by Mr. Heywood Sumner, another by Mr. W. H. Bidlake on "Architectural Drawings," and a third by Mr. T. R. Ablett on "The Art of Art Teaching," in which the author declared that the battle of the interests of art examination had yet to be won. An interesting address on the secret of knowledge was delivered to working men in the evening by Mr. Hodgson, R.A., who had given it the title of "Open Sesame: or, How to Unlock the Treasure House."

Yesterday (Thursday) Mr. A. H. Mackmurdo delivered a Presidential Address in Section D; after which papers were read by Mr. Alfred Gilbert, A.R.A., on "Metal-work," and Mr. Henry Holiday on "The Figure in Design," and Mr. J. W. Tonks on "Art as Applied to Jewelry and Personal Ornament;" while a combined meeting of the four other sections was held in the afternoon to hear a paper by Mr. James Orrock, R.I., on "A Gallery of British Art." To-day (Friday) a Presidential Address will be delivered by Mr. George Simmonds in Section B (Sculpture), to be followed in that section by papers by Mr. E. Onslow Ford, A.R.A., and Mr. B. Creswick. Messrs. W. Kenwick, M.P., and E. R. Ashbee will address Section E, and at a joint meeting of the other four sections Mr. Aston Webb will read a paper on "The Education of Architects," and Mr. F. G. Jackson, of the Birmingham School of Art, one on "Art Education in Relation to Industry." The closing meeting will be held to-morrow morning, when an address will be delivered by Mr. W. B. Richmond, A.R.A.

PASTELS FROM THE LIFE.

WILD animals are scarcely the subjects for an architectural journal, but we draw early attention, nevertheless, to a very admirable collection of such studies just opened for public inspection in Mr. Dunthorne's highly artistic gallery in Vigo-street, W. Mr. Wm. Unsworth, the architect, has recently altered these galleries, which he originally designed, and he has certainly imparted an individuality to the "Rembrandt Head," as the premises are called, which is not to be matched in its way in London. The arcaded gallery leading from the entrance is treated with white woodwork of exceedingly refined detail, and the delicate ironwork in grille and other fittings deserve particular mention as instances of care in minor matters. Unfortunately, owing to unavoidable circumstances, this gallery is badly lighted; but otherwise the treatment, so far as the architect is responsible, deserves much praise. As to the pastels shown by Mr. J. T. Nettleship, we may say they are, generally speaking, full of vigour, true to nature, and perfectly natural in colour—qualities which at once command attention. The breadth so necessary in pastel drawing is prominent in all his work, and in no example is the artist's ability more conspicuous probably than in the small study of a Golden Eagle (No. 30), wherein the varied browns which mark the beautiful plumage of that truly noble bird are rendered with exquisite and almost miniature like delicacy. No. 28, "A Lion Roaring," is a bold but soft drawing; and the same remark specially applies to the "Polar Bear and Cub," No. 44. "The Wapiti Stag" (No. 56) furnishes a dashing drawing, showing its antlers to the fore; while in No. 60 we noticed the skill in rendering the texture of fur so characteristic of the brown bear, whose keen, small eyes even in repose are full of intelligence and active watchfulness. Space prevents our enumerating other specimens, though we cannot pass over "The Bloodhound Puppy," No. 49, which is lifelike to a degree. "The Griffin Vulture Flapping" (No. 43) is a more striking subject; and the "Blue and Yellow Macaw" (No. 11) naturally furnishes effect of brilliant colouring. The head here seems a trifle crude and hard in line, and we observed a water-colour sky washed in to the picture of a "Pony and Foal" on Dartmoor (No. 6) as an exception to pure pastel work.

CHIPS.

Patrick Kenny, a labourer, aged 54, was charged at the Lambeth Police-court on Saturday with stealing some pieces of wood, the property of Messrs. Peto Brothers, contractors for buildings in course of erection in Brandon-street. Evidence having been given in support of the charge, the prisoner, who was stated to have been formerly organising secretary to a Labourers' Union, was remanded till Wednesday, when he was committed for trial.

Urban powers in respect of building having been acquired by the Eton Union Rural Sanitary Authority, the model by-laws of the Local Government Board have been adopted with a few additions, and will be put in force as soon as they are sanctioned.

The Munich Academy of Arts has elected the following as honorary members:—The painters, Messrs. W. W. Ouless, R.A., and Reid, of London, and Mr. Guthrie, of Glasgow; Mr. Thornycroft, R.A., the sculptor; and Mr. Macbeth, A.R.A., the etcher.

A complimentary dinner given at the Wellington Room, Red Lion Hotel, on Monday night, to Mr. Thomas Glenister, by the chair manufacturers of High Wycombe, to celebrate the first occasion of a member of the trade occupying the position of Chief Magistrate of the town, was one of the largest reunions of members of the staple trade of the town that Wycombe has ever seen.

At a public meeting at South Stockton on Thursday in last week, a letter was read from Mr. Thomas Wrightson, of Norton Hall, offering to erect a building at a cost of £1,500 for a free library. The offer was accepted, and it was resolved to adopt the Free Libraries Act. Mr. Wrightson is a member of the firm of Messrs. Head, Wrightson, and Co., engineers, and has three times contested Stockton in the Conservative interest.

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ILLUSTRATIONS.

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Our Illustrations.

BRITISH ART WORKERS AND MANUFACTURERS.

(See description on p. 666.)

HOUSE AT HASLEMERE.

This house occupies a commanding position on the high ground above the village of Shottermill. The central feature is a large hall, the entire height of the building, with billiard-table, musicians' gallery, &c. The chief material is red brick, with Portland and Ancaster stone dressings. The main staircase is in a continuation of the hall, with a lower ceiling, the central hall being lighted by a large glass lantern. A peculiarity in the construction of the house is in the fact that the kitchen offices are on the upper floor, and the effect of the building is enhanced by terraces of great length across the hillside, and by the use of old roofing tiles found on the estate. The architect is Mr. E. Francis C. Clarke, Westminster Chambers, and the contractor, Mr. Crossley, of Bromley, Kent.

NEW BOMBAY MUNICIPAL BUILDINGS.

We give this week illustrations of the above buildings now in course of erection immediately opposite the large Victoria Terminus, by the same architect, lately completed, and illustrated by us some four years ago. The style of architecture is a free treatment of Early Gothic with an Oriental feeling, which was considered to be the best adapted for the site and climate. The design is in strict harmony with the surrounding public buildings on the esplanade, namely, the Police Courts, Victoria Terminus, &c. The plan of the building is somewhat of the shape of a letter V, which gives the full benefit of the prevailing breeze to the different offices. The principal public entrance and grand staircase under dome are placed at the apex, or south end. The space occupied by the latter is first a square, the upper portion from the first floor being worked into a circle by interlacing arches supported on granite columns, which carry the small gallery and interior circular dome. This feature will be imposing, and one of the most telling in the buildings. The room above the dome will be utilised for storing records in racks erected for the purpose, and will be approached by a hydraulic lift from the back. In the tower above the record-room will be placed two floors, in which two large wrought-iron storage water tanks will be erected, containing a total quantity of 40,000 gallons of water. One tank will be utilised for the fire service of the buildings, and the other for working the hydraulic lift for the use of the corporators and officials. The tower works from a square having octagonal turrets crowned with domes at each angle into an eight-sided figure, then into a sixteen-sided figure, and finally into a circle, capped by a dome. The central gable facing south will be crowned by a colossal figure representing "Urbs prima in Indis," and below this, in a circular panel, will be carved the arms of the Corporation. The following offices are placed on the ground floor:—(1) In wing facing Hornby-row, town duty office, assessor's office with retiring room and w.c.; assistant assessor's office, with retiring room and w.c.; assessor's clerks' office, and ward office. (2) In wing-facing Cruikshank-road, health officer's office, with retiring room, w.c., &c.; assistant health officer's office with retiring-room, health officers' clerks' office, laboratory, two committee-rooms, for the use of the standing committee, and a separate carriage-porch, hall, and staircase, for the exclusive use of members of the Corporation when proceeding to the council-chamber on the first floor. The following offices are placed on the first floor: (1) In wing facing Hornby-road, chief accountant's office, with retiring-room, w.c., &c., chief accountant's clerks' office, small strong-room, record-room, hospital, committee-room, school committee-room, and clerks' office to committee-room. (2) In wing facing Cruikshank-road, municipal commissioner's office, with retiring-room, w.c., &c.; two assistants' office, with retiring-room, w.c., &c.; municipal commissioners' clerk's office, council chamber, with two retiring-rooms, w.c., &c.; secretary's office, with retiring-room, &c., and secretary's clerk's office. The council chamber will be 65ft. in length by 32ft. 6in. in breadth by 38ft. in height. The ceiling will be of teak wood and coved in section, but will be richly moulded, carved, and decorated. The arrangement of the seats and desks of the chamber is elliptical in form. Those for the president, municipal commissioner, secretary, &c., will be placed on a platform raised about 1ft. from the ground. The form of this chamber has been designed in accordance with well-known examples to insure the best acoustic results. The following offices are placed on the second floor: (1) In wing facing Hornby-row, deputy executive engineer (Roads and Building Department), with retiring-room, w.c., &c.; office for clerks and draughtsmen, deputy executive engineer (Waterworks Department), with retiring-room, w.c., &c.; office for clerks and draughtsmen and Tansa water-works office. (2) In wing facing Cruikshank-road — executive engineer's office with retiring-room, w.c., &c.; deputy executive engineer (Drainage Department) with retiring-room, w.c., &c.; office for clerks and draughtsmen of the Drainage Department, record-rooms over corridors to council chamber, and corridors in front of large dome. Detached latrines for European and native clerks, approached by covered corridors, have been provided on all floors. Wide and spacious corridors have been provided on all sides of the buildings, and on either side of the principal staircase and dome, for direct communication with the several offices, and for protection from sun and rain. Should a large public hall be required at some future time, Mr. Stevens has suggested that it may be placed on the ground north of the council chamber between the proposed new road and the police court, and further office accommodation by extending the buildings along the Hornby-road, communication being obtained to both buildings by bridging with 20ft. corridors over the road—the bridges to be similar in character to the Bridge of Sighs, at Venice, which would form handsome architectural features to the buildings—the space between the two wings of the buildings will be turfed and laid out as an ornamental garden with a fountain in the centre, which will have a pleasing and refreshing effect in a climate like that of Bombay. The cost of the buildings, including drainage, water supply, fire service, electric lighting, hydraulic lift, and furniture will amount to about 12 lacs of rupees, or about £100,000. The buildings are making rapid progress, they being already 20ft. above ground level, although they were only commenced about nine months ago; at the present rate of progress the buildings should be completed in another two-and-a-half years. Mr. F. W. Stevens, C.I.E., F.R.I.B.A., &c., of Bombay, is the architect; Ruo Sahib S. Khanderoo, the resident engineer or clerk of the works, and Messrs. Veukoo Baloo and Co., the contractors.

COTTAGE AT FLEET.

Our illustration shows a cottage just erected near the village of Fleet, Hampshire, for Mr. A. Boucher. It is substantially built with hollow walls, &c., the whole of the exterior walls being faced with red bricks of good colour obtained in the neighbourhood. The upper story is of pebble-cast on brickwork, and the half-timbered gables in unstained English oak. The whole of the roof is covered with tiles from the Hartshill Tile Co., of excellent quality and colour. The works were carried out by Messrs. J. Pool and Sons, Winchfield, Hampshire. The architect is Mr. S. Colman, 5, Lancaster-place, Strand.

DOUBLE CHAPEL IN THE CASTLE AT EGER, BOHEMIA.

The lower chapel was built in 1183 by Frederick Barbarossa. It is round-arched and plain groined; the columns and stone dressing are of grey granite, the groining being of fine granite and cement. The columns are slightly bellied, becoming reduced in thickness toward the top. The floor level being about 6ft. below the ground outside, the damp has risen, producing, however, a fine effect of colour. A stone staircase leads to the upper chapel, which dates from 1295. This chapel is Pointed in style having groined and ribbed vaulting. The effect on entering from below is very fine, although one cannot regard with favour the exaggerated portions of the columns, which are not white marble. The bases are well moulded, and the caps beautifully carved. The exterior is very plain, the only relief afforded to the wall being the pilasters which run up from ground to roof, and are intended to resist the thrust of the vaulting, though they do not in every case come opposite the ribs. The upper windows are moulded, but have no tracery.—F. Lishman.

CHIPS.

A new market hall at Sandbach was opened on Tuesday week by Lord Crewe, who gave to the town the site, till recently occupied by an old hostelry. The new building contains, on the first floor, a hall seating 500 persons, approached by three staircases, and containing a gallery. Below is a hall fitted with market stalls. At one end of the building is a clock tower. Mr. Bowers, of Nantwich, was the architect, and Mr. Stringer the builder. The cost has been £5,000.

The parish church of Linstead Parva, Suffolk, is about to be restored from plans prepared by Messrs. Bootle and Olley, of Great Yarmouth.

A new mission church in Joiner's-square, Hanley, was dedicated by the Bishop of Shrewsbury on Saturday. It has been built from designs by Mr. E. L. Maddock, and the contractors were Messrs. Cornes, of Hanley. It will accommodate about 300 and has cost about £3,000.

Mr. George Gordon Hoskins, F.R.I.B.A., was returned at the head of the poll, to the town council, in the only contested election at Darlington, the result being, according to the *Newcastle Chronicle*, "a foregone conclusion."

Among the adjudications in bankruptcy announced in Friday's *Gazette*, the names appear of Reuben Button, jun., Denton, near Gravesend, late of Stamford-hill, architect and surveyor; and John Cobden Eggar, Woodford-cum-Membris and Banbury, estate agent, architect, and surveyor.

The church of Holy Trinity, Blackman-street, Southwark, a modern high-pewed edifice, lacking chancel, is to be restored from plans by Messrs. Carpenter and Ingelow. At a meeting held last week a restoration committee was appointed, with instructions to obtain a faculty.

The local board of Cadoxton-Barry have adopted a scheme prepared by Mr. J. C. Pardoe, the surveyor, for sewering the Barry Dock district. The estimated cost is £4,000.

The memorial to Canon Liddon will take the form of a recumbent figure on an altar-tomb, to be placed in the apse of St. Paul's.

A Factory Girls' Institute, built in Carr-street, Ipswich, from plans by Messrs. J. Shewell Corder and James Brown of that town, was opened last week. It is faced with red brick, and is three stories in height; it contains a restaurant, 45ft. by 25ft., a club-room, and apartments for the superintendent and servants. Mr. F. Bennett, of Ipswich, was the builder, and the cost was £1,500.

The chancel of All Saints' Church, Leeds, Staff., is undergoing internal decorations in colour, from designs by and under the superintendence of Mr. Gerald C. Horsley.

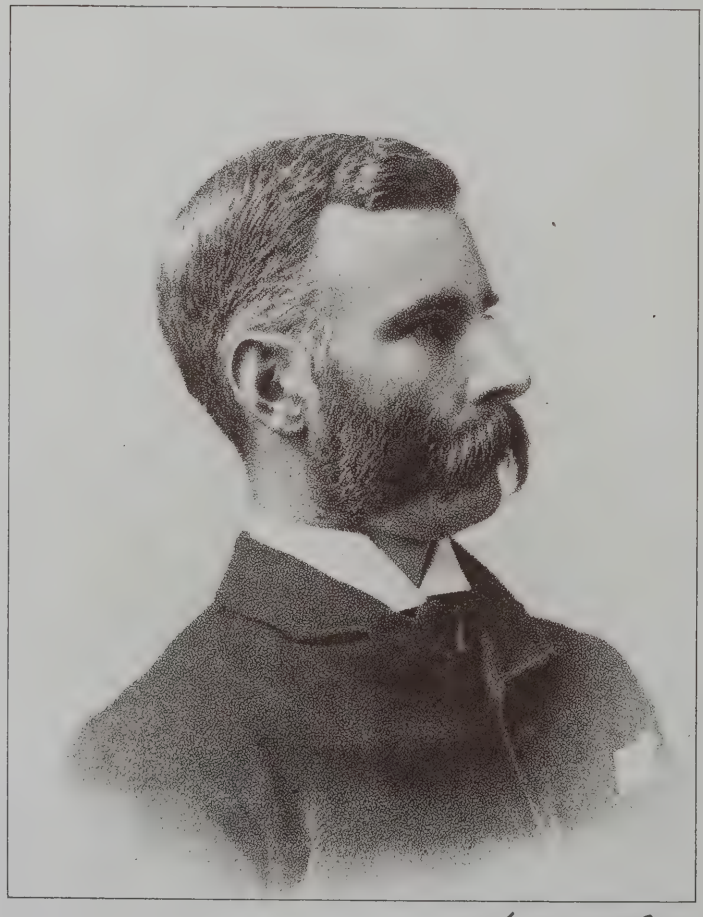
The gasworks at Rawmarsh, near Rotherham, were inaugurated on Friday by the chairman of the local board. The works have been erected at a cost of about £10,000. The scheme has been carried out under the direction of Mr. Newbegging, C.E., Manchester. The manufacture of gas has been already commenced.



Mr. J. FARRELL. (CLARIDGE'S PATENT ASPHALTE Co)



Mr. ROBERT BO



Mr. FRANCIS H. POTT. (MESSRS BURT & POTTS)



Mr. NEVILE KEMP



ert Boyle

RT·BOYLE·&·Co LIMITED)



W. Eckstein

MR W·ECKSTEIN (MESSRS HAYWARD·BROS & ECKSTEIN·)



Neville Kempthorne.

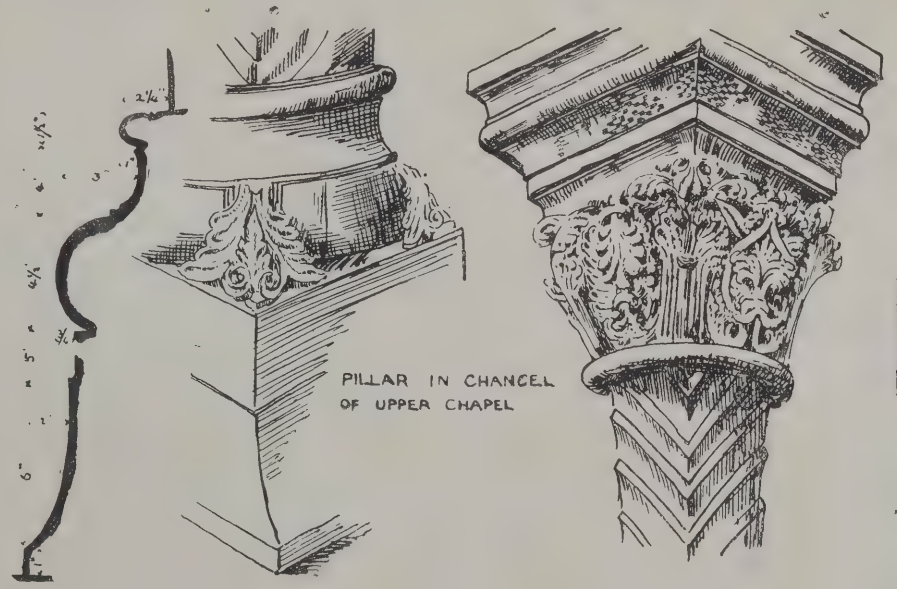
RS MAINZER·& KEMPTHORNE)

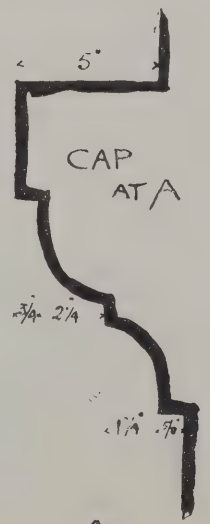


Dan Thos Bostel

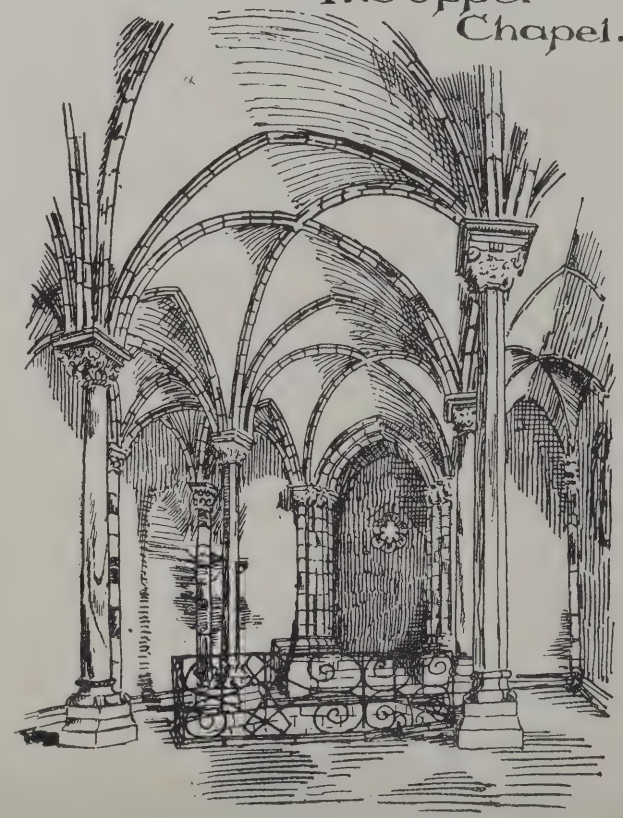
MR DANL·THOS·BOSTEL· (OF PIMLICO·)

DOUBLE CHAPEL IN THE CASTLE AT EGER BOHEMIA

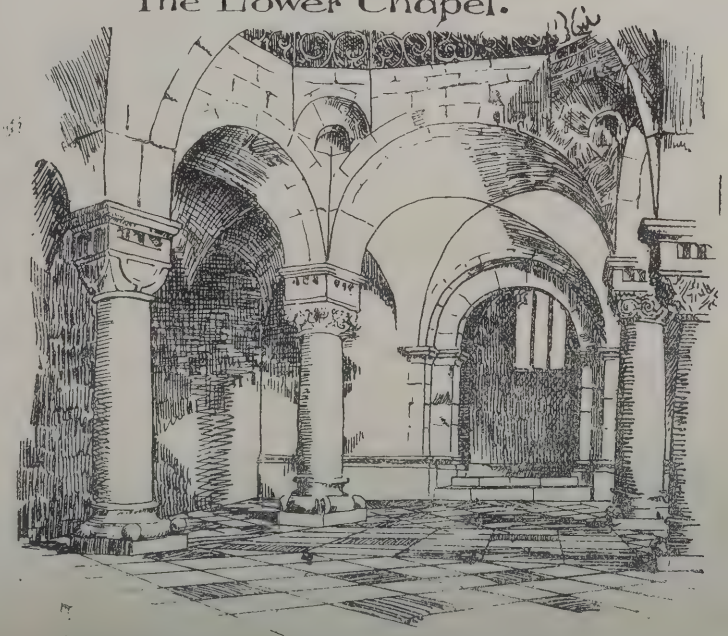


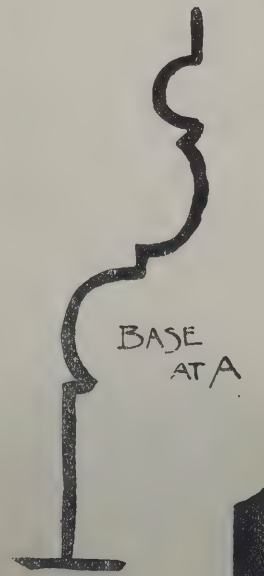


The Upper Chapel.



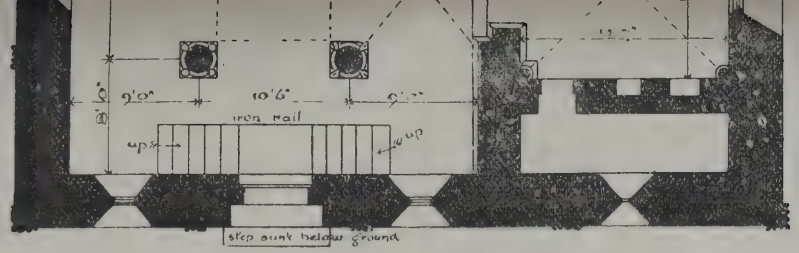
The Lower Chapel.







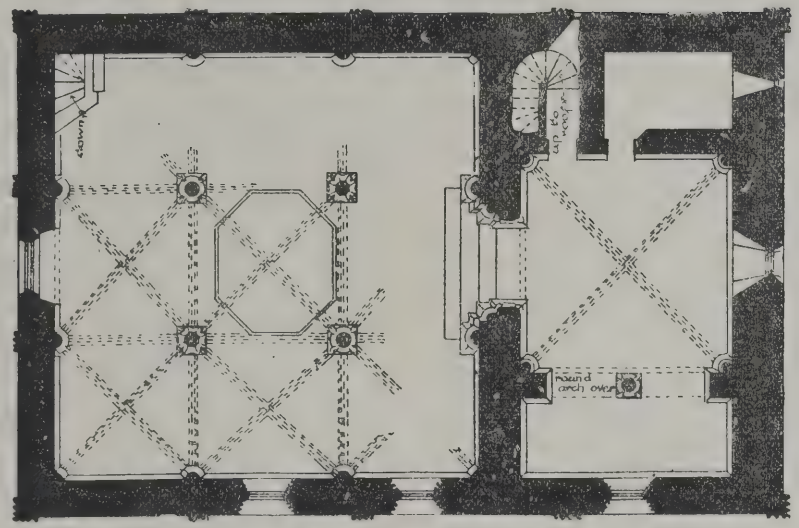




Plan of Lower Chapel, A.D. 1103.

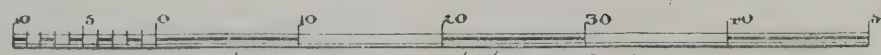


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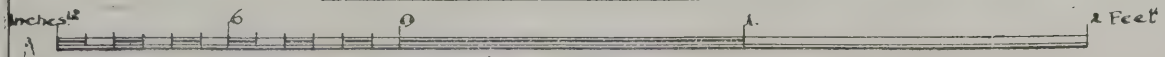


Plan of Upper Chapel, A.D. 1295.

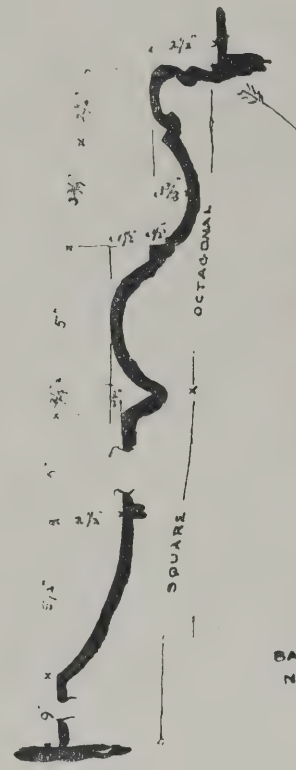
MEASURED IN JUNE & DRAWN IN SEP. 1890
BY FRANK LISHMAN.

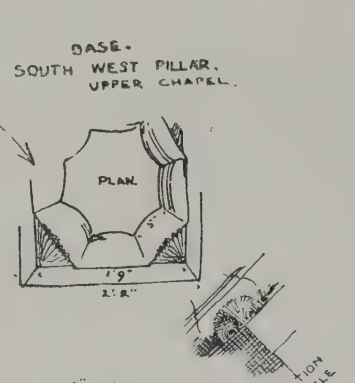


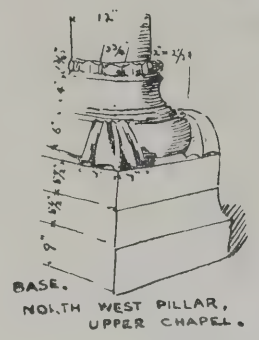
Scale 5 Feet to an Inch

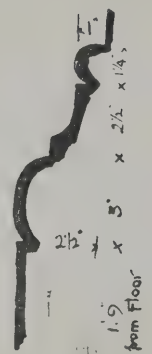


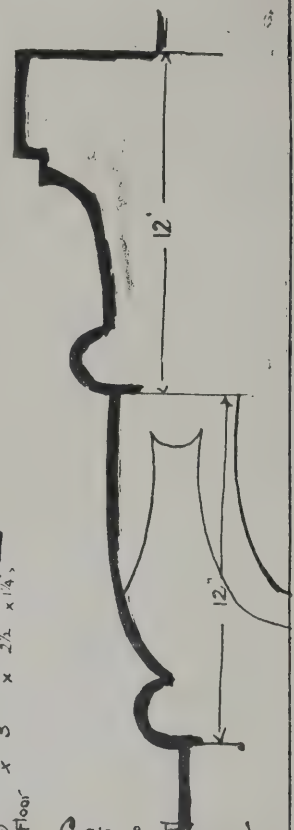
Scale for Details, 3 Inches to a Foot











Cap & Base at B.

WAYSIDE NOTES.

AS I had anticipated, the Presidential address at the R.I.B.A. was of that pleasant typical nature which appeals to the sympathies of an architect-audience. Mr. Waterhouse had prepared a most interesting commentary on subjects of vital importance to the profession, on vexed questions, and on matters still *sub judice*. From first to last the address was listened to with evident delight by the Fellows and Associates present, of whom there was a goodly company, the council-chamber being packed to its fullest extent. In every sentence was something of interest, either on practical or artistic grounds, and opinions such as those expressed upon the subject of "building legislation" must influence events in the near future. Sooner or later one feels that the council of taste to restrain the repeated perpetration of architectural atrocities in the streets of London must be created. Its absolute necessity becomes daily more apparent.

In the portion of the address relating to "students' work" there is much that should be directly taken to heart by the young architect. Particularly *à propos* is the reference to the recklessness of the average sketcher, who, perchance, may consider himself a *student* of old buildings. Would that Mr. Waterhouse's emphasis of the necessity for doing one thing thoroughly, instead of a lot of things badly, were pondered over by everyone sketching with a view to acquire architectural knowledge! That it is no mere fancied vice of the ordinary student, we are, many of us, well aware, and the result of which practice is the acquisition of a hybrid store of forms and features without the ghost of an idea how to make practical use of them. It were a great thing for the future of architecture in this country if the advice tendered to students on Monday evening led to a more thorough and analytic study of old buildings, on the part of those accustomed to skim off surfaces, obtaining, as they think, the cream of the design, whereas in reality only touching the evanescent surf, leaving beneath the deep waters of architectural truth.

Mr. Waterhouse has made some suggestions as to the future relations of Institute and Association, and many members of both societies will surely agree with him touching the economy in working expenses that will accrue from joint action in regard to the matters named. As to the likelihood of the suggestion being carried out, one feels rather doubtful, for, in the first place, it will not please every member of the R.I.B.A. We know this well enough. That the Association as a body would jump at any definite offer, generously made by the senior society, I fully believe; that a certain party in its constitution may think differently I also believe. The Association has large ideas just at present, and the Institute may be considered all very well in its way; "but——" Every moderate person will wish that the Institute Council could see its way to adopt the suggestion made in a truly liberal manner by its President, and that the Architectural Association, aware of the value of aid offered by the elder body, with which, in spirit, it is affiliated, will not let motives of any kind, except the desire of a noble independence, stand as a bar to acceptance. It is plainly evident that any amalgamation of the two bodies, if ultimately found desirable, must be very gradual. The welding must take place slowly if it is to take place at all. I would therefore humbly counsel the Association to accept, with all grace, any offer of the Institute to share burdens that may be the outcome of the kindly-mentioned suggestions made in the course of the Presidential address.

Mr. Waterhouse, I hear, was a little indisposed after the fatigues of Monday evening—a fact that will not surprise those who know the work the P.R.I.B.A. gets through, and the many calls on his time and strength occasioned by an extraordinarily extensive practice. Add to this the labour in preparing and delivering so full and finished an address as that given on Monday, and we shall only feel the more indebted to its author, and heartily trust that he quickly recovered his natural energy of mind and body.

On or about December 15, Mr. D'Oyly Carte's new theatre will be opened. This is a really fine building, and we shall all look forward to an opportunity to inspect its internal architecture. Concerning the manner of the arrangements for the planning, design, and construction of the work, the reader should well know, by this time, my own private opinion, so it will be unnecessary for me to excite myself further in the matter.

After a full understanding of the nature of the works comprised in the construction of the City and South London Railway, the engineering fraternity will accord with the sentiments expressed by the Prince of Wales, when, on Tuesday last, His Royal Highness spoke at the luncheon following the opening ceremony, and said that "the greatest credit redounds upon those who have contrived this scheme and have carried it to such perfection." As described in the public press, the undertaking would appear to possess that savour of bold originality that always accompanies a really great work. In it we see, so to speak, the working of the afflatus of the engineer. This originality has not only permeated the design and methods of construction, but pervaded the arrangements for working the railway. It is to be doubted whether it is here so beneficial, but the scheme for getting rid of ticket-buying and ticket-clipping, &c., is excellent, and will doubtless prove as good in practice.

The Bethnal-green scheme for providing new blocks of dwellings for the poor is to go through as proposed by the Housing of the Working Classes Committee of the London County Council. There was considerable discussion on the subject at Tuesday's meeting of the Council, but the majority of the Councillors were evidently in favour of the scheme. So be it; and at any rate the poor will benefit. But the "willing horse" will find an abundance of work to do. Yet it is a consolation to believe that the landlords of the wretched shanties to be bought up are to receive less compensation than they would have, had their tenements been more habitable. I must confess that I cannot quite make out how this is to be done under the existing laws, but suppose it is all right. As to the main idea of the improvement scheme, I like it; but certainly object, with many County Councillors, to the apparent neglect of legitimate means of coercing demoralised landlords.

The interesting time in connection with the outcry for dwellings for the poor will be some years hence, when we may learn whether the poor really get housed, or the same thing happens in connection with the occupation of the houses as has happened in connection with the occupying of "artisans'" dwellings. Moreover, as Colonel Hughes, M.P., County Councillor, said, a very large proportion of the working classes prefer living in small houses to model dwellings. Note, too, as bearing on this subject, the preference of the poor housewife for washing-day in her own cramped apartments to that in the clean, convenient, and comfortable wash-houses provided for her at a nominal fee by the State.

Whitehall Chapel Royal is to be permanently closed. As to its future we are ignorant. Never having been consecrated, it may be available for many different purposes.

A fire at the Ducal Palace, Venice, should not surprise us, much as we may be grieved. A friend of the *Times* correspondent at Rome writes that he recently visited the lower regions of the far-famed palace, and, having successfully braved volumes of smoke, discovered a brisk fire upon an open hearth in close proximity to stores of inflammable material. The friend says a pot of broth was being cooked, but this seems a curiously superfluous detail. What more concerns us is that if the good lady who appears to be a sort of caretaker at the palace continues her broth-cooking operations, we may some day hear of the much-eulogised marble sculptures being grilled.

The South London Polytechnics Committee have, with Mr. Rowlande Plumbe's assistance, selected six of the fifteen designs submitted for the Polytechnic in the Battersea Park-road. The successful architects—embracing some big names—go in again, so we may in due course hear of a final selection. Touching competitions, I note the advertisement from Exmouth, as to the £2,500 church to seat 600 persons, and the magnificent premiums of £15 and £5.

The British Consul-General at Bagdad, in his latest report, has given some interesting observations on the art of brickmaking as expounded by the brickmakers of that Eastern desert-bordered city. Stone being little used, there is a great demand for bricks at Bagdad, the place being principally built of kiln-dried bricks. The kilns surround the city, and when the Tigris or Euphrates overflow their banks, and the waters compass them about, they resemble so many islands, while bricklayers are stopped for want of bricks, and the supervising architects of Bagdad have more leisure to read their BUILDING NEWS. Price of bricks at Bagdad—our consul does not say whether at the kiln or delivered on the job—£1 16s. per thousand, 12in. square; and 18s. per thousand, 7in. square. How thick, is not stated; but a calculation might be made, given the fact that a donkey carries not more than 10 large or 25 small bricks. The bricks are of a chrome-yellow tint, and very brittle. The Consul-General thinks that there would be an opening in Bagdad for brickmaking on a scientific plan. There appear to be these facts to guide any intending adventurer:—At Trâh is a tenacious clay which might be worked perhaps; unskilled labour, 9d. per diem; 5d. for boys; fuel abundant; excellent wood at 1s. 6d. per cwt.; and "thorny desert scrub," now burnt in the kilns, 6d. per ass-load. Here is a chance for some manufacturers, and an opportunity for their travellers to go East for a season, and leave the weary British architect in peace. GOTH.

ST. SOPHIA'S, SALONICA.

MR. F. C. PENROSE, the surveyor of St. Paul's, quotes in the *Times* from some interesting letters written by Messrs. R. W. Schultz and Barnsley, students of the British Archæological School at Athens, who are now at Salonica. It is satisfactory to find that the Byzantine portion of the great basilica of St. Sophia has suffered very little by the recent disastrous fire. The students remark:

"We are taking the opportunity of St. Sophia's being in a deserted state to make new measured drawings of it—Texier's (exteriors especially) of this church being very far out, the drawings having evidently been made after a lapse of time, perhaps of years, from M. Texier's notes by people who had never seen the originals. The mosaics, although practically uninjured, are covered with a coating of smoke and dirt, which makes them unfit for drawing. Careful drawings could not be made of these without expensive scaffoldings in the dome and bema. The church is structurally still sound; some of the fine caps and old green marble pillars are irretrievably ruined. The dome is all right. The aisle roofs, which were wooden and modern, have been burnt, as also the Turkish colonnade in front. The fire has burnt out a part of the dirtiest and thickest populated part of the town, but in proportion of area it is, perhaps, about one-tenth or less of the inclosure within the walls. It lies close to the water and on the level. Seen from the sea, the town seems as if nothing had happened, blocks along the quay, which had escaped, hiding the mass of ruins behind."

The scandal in connection with the jobbery in the construction of the Government building at Chicago has culminated in the report of the United States Inspector of Buildings just issued. He says that the only way to save the buildings from absolute collapse will be to lay a new foundation for them, similar to that used in the Washington Monument. This, he says, would cost two and a half million dollars, and he believes it would be as cheap to erect new buildings.

The Early Norman church of St. Pancras, Coldred, was reopened last week by the newly-appointed Bishop of Dover after restoration. There is no tower, but a double bell cot at the west end, of 14th century date. The church is situated within the area of an ancient camp, of small size, inclosed by a lofty bank and a deep ditch irregularly circular in form. The roofs have lately been stripped, and lined with felt to exclude draught, while the plastered ceiling of the nave has been removed and boarded. The porch has been replaced by a new one of open timber work. The bell-turret, the upper portion of which had been destroyed and replaced by an unsightly parapet of brick, has been repaired, and its missing gablets rebuilt in stone. The flagging of the passages has given place to red and black tiles, and a layer of concrete placed beneath all the floors. A reredos, of oak, has been erected, and a vestry has been built on the north side of nave.

CONTEMPORARY ART WORKERS AND MANUFACTURERS.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

THIS sheet is the seventh of this series. Mr. John Farrell is the secretary and manager of Claridge's Patent Asphalte Company, Limited. He was on the provisional committee before the company was established in April, 1838, and has acted as secretary since 1840. When the company reached its Jubilee year in 1888, the proprietors present at the annual general meeting presented him with a testimonial of the value of £1,000. He is regarded by the staff of workmen as most exacting in the proper execution of all works, and has a faculty of detecting the slightest defect in the labour, which he never allows to pass unnoticed. To this, in some measure, may be due the high opinion entertained of the company by all the well-known members of the architectural profession, and the conviction that when a work is intrusted to the company it will be carried out in an efficient manner. The photo. was taken last month by Mr. Field, of Putney.

Mr. Robert Boyle, of Messrs. Robert Boyle and Son, Limited, the well known ventilating engineers of London and Glasgow, was born in the latter city in the year 1851, and, an inventor of note himself, comes of a family of inventors, his father, the late Mr. Robert Boyle, who died some twelve years ago, and also his grandfather, a famous surgeon in his day, having produced many valuable inventions of considerable public utility. Mr. Boyle's name is best known in connection with his improvements in ventilating and sanitary appliances, he and his father being the joint inventors of the celebrated Self-acting Air-Pump Ventilator, which revolutionised automatic ventilation; but which, however, in its original form has long been discarded in favour of improved constructions on the same principle invented by Mr. Boyle, and which, though much more powerful and of superior make, is now sold at 50 per cent. less than the inferior forms previously manufactured, constituting not only one of the most efficient, but is probably the cheapest, ventilator in the market. Mr. Boyle has laboured for the last twenty years in the cause of sanitary science, and as one of the founders of the profession of ventilation engineering, has largely contributed to raise this all-important subject from the obscure and neglected position it occupied to its present high place in the ranks of the sciences, and made the name of Boyle in connection with ventilation a household word throughout the world round, which Mr. Boyle has thrice travelled in the execution of his professional duties; a description of his last journey recently appearing in these columns under the heading "A Sanitary Crusade round the World," which gave some very interesting details of his labours for the promotion of improved sanitary measures in Egypt, India, China, and Japan; and he has well earned the distinction of gold medallist and other honours conferred upon him by different learned societies in this and other countries, the numerous scientific and other contributions to literature of which he is the author being well known and justly esteemed. The success of Mr. Boyle's system of ventilation wherever applied is so well known that no special reference need be made to it here. It is testified to by the highest authorities, including Mr. Alfred Waterhouse, Sir Arthur Blomfield, Mr. Arthur Cates, and Professor Aitchison. Mr. Patmore, of Ramsgate, is responsible for Mr. Boyle's photograph.

Mr. W. Eckstein was born in the year 1846. His father, Mr. John Eckstein, of Notting Hill, died at 33 years of age. William Eckstein being one of seven children, and his father being free of the City, he was educated at the City of London School, open to the sons of freemen; and although it was intended he should follow his brother in the public service, he elected to be brought up as a mechanical engineer, for which purpose he served time, and worked in the several branches at Messrs. Benham and Sons and Henry Clayton and Co. When he was 21, it was decided that he should go up for the Indian Public Works' examination, for which purpose he served with Mr. W. Parcey, of Westminster, who was engaged in designing some of the chief railway bridges for the Indian Trunk Lines. During the same time he studied at King's College higher mathematics, surveying, &c., and in due course went up for, and passed, the examinations for the Indian Public Works Department appointment, and went out under covenant with the Secretary of State for India, being known as a Stanley engineer. In 1868 he left for Calcutta, and, being fourth on the list, selected the North-Western Provinces, to which he was posted, and joined at Allahabad, from which time he superintended the various military and other buildings under construction at Allahabad, Cawnpore, Meerut, &c. After spending two years in the plains, his health was not all that could be desired, so Col. Fraser, the Chief Engineer, posted him to the new Chakrata Division, under Col. D. Ward, who was laying out the Chakrata Hills for a new sanatorium and convalescent depot. Mr. William Eckstein was associated with Col. Ward for about five years, during which time, besides the station work, he had charge of the upper section of the Hill Cart Road, the Sacquar Suspension Bridge over the Jumna on the Mussoorie Road, &c. When officers were required to open out works in the Bengal famine year of 1874, Mr. E. was drafted down country to the Tirhoot District, and was posted to the charge of relief works of the Chumparun District, and had the control of the operations between Morufferpore and Bettiah. He afterwards reverted to his duties in the Military Works, and was posted to the special division at Allahabad, under Major Clive; then to the executive charge of the Fyzabad division. His employment in the Military Works did not altogether suit his tastes, and he endeavoured to get posted to the railway branch, but although two or three superintending engineers applied for his services, the Inspector-General of Military Works would not part with him; consequently, after eight years' service, he applied for furlough. When he had been at home a few months he heard of an opening in the old-established firm of Hayward Brothers, Borough, manufacturers of various specialities, and became a partner in 1878, having his name connected with the firm, which was then Hayward Brothers and Eckstein. It was soon apparent that he would have the lion's share of the work, on account of Mr. Hayward's uncertain health, and who was absent for eight or nine years. He, however, threw his energy and perseverance into his work, and has now more than doubled the concern, which, though perhaps of medium size, still is one well reputed for excellence of work. Last year Mr. Eckstein added a foundry branch to the works. Besides working closely at his business, which was enough to occupy his whole time, Mr. Eckstein has served ten years as warden of the parish of St. Saviour's, Southwark; is a member of the local board of works, and on the general purposes committee. He is also a member of the committee for the re-building of the nave of St. Saviour's Church; has been an associate member of the Inst.C.E., and a member of the Society of Arts for over ten years. He was born free of the City, and has taken up his livery in the Stationers' Company. Our illustration is taken from a photograph by Barraud, Oxford-street.

Mr. Francis Holliday Pott trades in partnership with his father, William Holliday Pott, as Burt and Potts, wholesale ironmongers, engineers, and wrought-iron and gun-metal casement makers. Francis Holliday Pott commenced business in 1866, and in 1881 joined his father in partnership. In 1875 he assumed the entire control of the casement department, since which time many large and important orders have been carried out by the firm. The casements made by the firm have always been considered the best in the market, which is testified to by the flattering testimonials they hold from most of the leading architects. They have just finished an order for 276 gun-metal casements for Lord Windsor, Hewell Grange, near Bromsgrove, and they have at present in hand a large order for similar casements for Sir Hickman Bacon, Thonoc, Gainsborough. They have also just made the casements for the new almshouses for the Duke of Portland, on the Welbeck Estate. They have also carried out within a short time large orders for Lord Revelstoke, and many other noblemen and gentlemen. Mr. Pott's portrait is by Messrs. Russell and Sons, of Wimbledon.

Mr. Nevile Kempthorne, of the firm of Mainzer and Kempthorne, marble mosaic artists and workers, of No. 18, Berners-street, W., was born at St. Helena, where his father was colonial chaplain for 21 years. He received his education in England, first at Brighton, and afterwards commenced an engineer's training at King's College, London, from 1862 to 1866. Subsequently he became a pupil at the works of Messrs. James Simpson and Son, mechanical engineers, at Pimlico. For several years, as resident engineer, he acted on many important works connected with water supply, principally at Chertsey, Canterbury, Sevenoaks, Sudbury (in Suffolk), Kettering, and Blackburn; he also superintended the laying down of tramways at Wolverhampton, Gloucester, Chiswick, Hammersmith, and Richmond, and the erection of a number of buildings connected therewith. In 1880 he commenced practice at Acton, W., as a surveyor, and in 1887 he joined the present firm, in which his extensive practical knowledge of all branches of building work is of great assistance. New premises have lately been taken at Berners-street in order to provide facilities for the rapid growth of the business. Messrs. Byrne, of Richmond, executed this portrait.

Mr. Daniel Thomas Bostel was born in the year 1837, and at 12 years of age he was put to work in his father's carpenter's shop, elevated on two 3in. deals, that he might reach the bench, to learn joinery and general builder's work in the City of London; his father and family were citizens for many generations, and Freemen of the City and many of its various Guilds. Having constantly to attend on plumbers, Mr. Bostel conceived the idea that he should prefer to be a plumber, or rather, in those days, a "three-branch hand," and a favourable opportunity presenting, he got an engagement at Brighton to finish his time with a practical man doing a very comfortable business, who treated him as one of his own sons in every way. Determined to get on after leaving his employ, Mr. Bostel obtained employment at several good firms as journeyman, and after a short time took work for the trade, ultimately purchasing a very old-established business in Ship-street, Brighton. Here he executed some very good work, carrying out several large plumber's contracts, amongst them being the new workhouse (a very large institution, comprising hospitals for idiots and other separate large buildings), for which the architect seven years afterwards sent Mr. Bostel a certificate saying he had carried out the sanitary works to his entire satisfaction, and up to that period it had proved substantial, as not a single portion had needed attention. Mr. Bostel also did the whole of the plumber's work at Hobden's Baths, and a great part of the finishing of "Brill's." Finding his endeavours to carry out plumber's work as it ought to be carried out appreciated, Mr. Bostel determined, in 1873, to devote the whole of his thoughts and attention to sanitary work, inventing various improvements in drains, water-closets, traps, ventilating caps, and exhaust terminals, and this work is now familiar to the public all over the world. In 1878 he obtained the first prize medal from the Sanitary Institute of Great Britain in practical competition. Mr. Bostel claims the credit of being the first to make a safe and practical closet-trap and closet in one piece of Staffordshire ware, which is known in Europe as the Brighton Excelsior and in the U.S.A. as the Brighton. He has greatly simplified the system of house-drainage, and believes he could also greatly improve the system of sewering towns at a considerable reduction of cost, with a total absence of so-called "sewer ventilation," which simply means "poisoning the atmosphere," and at the same time giving a product that even the British farmer would be glad to use. Mr. Bostel has three sons with him in business. His photograph was taken by Mr. Downey, of Ebury-street.

ARCHITECTURAL ASSOCIATION.

THE second meeting for the present session of the Association was held on Friday evening, the President, Mr. Leonard Stokes, in the chair. —The adoption of the report and balance-sheet was moved by Mr. F. T. Baggallay, who remarked that neither could be said to be thoroughly satisfactory. The attendance in many of the classes had fallen off, and one or two had not been sustained at all; while the finances showed a decreased balance, one which had fallen from £775 to £692. Even this was illusory to some extent, for no allowance was made for depreciation in the valuation of furniture, books, and fittings; the arrears of subscriptions, too, had increased by £10. Plainly, they were not paying their way, and although it would be some years,

at that rate, before the balance was exhausted, yet it would be but a question of time.—Mr. C. H. Brodie, who seconded the motion, said while the report was not altogether satisfactory, it was not a disadvantage in all cases that the classes should have fallen off, so long as the quantity of the work turned out was as good as ever. The balance in hand was all nonsense, for who could check off the valuation if, as it appeared, it had not been re-estimated for many years.

The resolution was carried *nem con.*

Mr. F. R. Farrow remarked that Mr. W. R. Quick's classes would not be held concurrently, but the mechanical section would be taken every Monday until completed, and would be followed by that on graphic sections. The order of the forthcoming A. A. meetings had been reversed: the revision of the rules would be postponed from November 28th till the meeting of the 12th December, so as to give time for printing and circulating the alterations, and on November 28th Mr. White would read his promised paper.—Mr. Brodie presented a numerously signed petition asking that a notice-board, directing to the classrooms, common room, and library, might be put up in the hall, and the names painted on the entrance.—The President stated that the requisite permission had been obtained of the owners of No. 9, Conduit-street, and the work would be proceeded with.

The following 39 new members were elected:—F. T. Maltby, C. G. Mayhew, H. Godsill, T. A. Sladdin, P. F. Hockings, F. L. J. Barrow, F. E. Ward, W. J. A. Anderson, E. A. Richards, T. Leake, A. J. Dalton, C. P. Bannell, A. E. Kirk, E. P. Cameron, H. Webber, A. E. Allen, C. E. Thomas, C. H. Gatehouse, J. H. Jones, jun., H. E. Jones, W. A. Forsyth, T. J. W. Anderson, G. E. Boyes, P. C. Fuller, J. H. Tyars, F. W. Chancellor, R. T. Barker, A. H. L. Mackinnon, H. T. East, O. E. Hill, E. A. Vigers, C. E. Blackbourn, J. T. Chalmers-Francis, P. Soames, H. H. Robinson, Lester Bains, R. Jones, J. Haitree, and A. Spiers.

The President announced that Mr. Francis G. Hooper had found it necessary to resign his seat on the committee. That body had accepted the resignation with some regret, and would proceed at the next meeting to nominate a successor, but any other nominations could be made at that meeting by any two members.

THE PAST, PRESENT, AND FUTURE OF THE ASSOCIATION.

A series of four papers dealing with this topic were read by Messrs. A. Beresford Pite, Walter Millard, R. Needham Wilson, and Owen Fleming.

Mr. Pite urged that within certain limits and in attaining certain objects the Association had been a great success. The papers read at their meetings were often valuable to the whole body of architects, and rivalled in interest those produced for the Institute. Below the surface, in its classwork, the Association had been quite as successful, an important factor in this success having been that opportunities for architectural study had been given without interfering or competing with any of the surrounding and more regular methods of architectural education, nor had its classes clashed with the usual requirements of articles of pupilage. What had it done for the higher and ultimate objects of the profession? The improvement of the individual architect was not the only end in view or the final results of their operations. The work and influence of the Association need not, and ought not to be devoted to the cultivation of professionalism, to the neglect of wider and greater influence upon the practice of the art of architecture. In the past this field had been scarcely cultivated. The fact had not been grasped that by influencing for art a large body of young enthusiastic architects, the outward and visible architecture of our streets and country places might be vastly changed. The burning question, the will-o'-the-wisp of the hour, the present ideal of future attainment, was not the advancement of art or the recognition of its essential unity, but professional qualification, tested by enigmatic examination, to be sealed by legislative enactment in registration against all poaching by "auctioneers, land-agents, and surveyors," or other unauthorised and unchartered commission agents. The bosom of the Association was now heaving with emotion and excitement, not to ascertain wherein lay the power of such great designers as Burges, Street, Godwin, Thomson, or Cockerell, but as to how best to solve "apophyge," "hagioscope," "acroteria," or "ambon," and as to which was the safest method of guessing the number of columns in a temple, or either of spelling or pronouncing the names of some "leading architects" of a selected period. Could pedantry be more aptly illustrated than by such questionings, or the docility of the youthful architectural mind by submission to them? At present we were off the track, in the absence of Scott, Street, Burges, and Godwin. We had gone astray. The great designers that remained who were their later contemporaries, and who shared their powers and zeal, were silent, and preferred retirement, so that we were left to inartistic boards of examiners and the feebleness of their inexperience. The profession might be advanced, but the art would be forgotten. But what was the hope of the Architectural Association? Their system of co-operative assistance could be maintained and enlarged in whatever direction or degree might be necessary for the advancement of the architectural and artistic knowledge of members. Classes for drawing from the antique, for architectural modelling in wax or plaster, for perspective drawing, for the systematic criticism of modern work, and the analysing of the design of ancient buildings, might perhaps be added to those already existing, and embrace a practical and artistic range of subjects quite outside the purview of examination boards. There would then be no need for revolutionary measures, the ultimate object of which was to create a constituency for the Institute, and which must issue in the forsaking of the Association, so soon as the examination was passed and the A.R.I.B.A. acquired. The curriculum that had been propounded would essentially reform the whole work of the Association upon the basis of this examination programme of the Institute. It was proposed to do this very thoroughly, at the expense of their old traditions, and of their old success. Was the end to be attained worth the sacrifice? Would recognition of the examination as their goal and object advance the Association in numbers, friends, and usefulness? Would their old success remain to them as an independent body when they had sacrificed individuality to the generalisation of the academic programme? Did all this tend to the advancement of the art of architecture? He believed the Associateship examination of the Institute to be in part a fair test of certain qualifications for the surveyor's part of the architect's many-sided character, but it was ill-applied and ill-suited to encourage appreciation of daily office work, or to improve the daily practice of a student. It removed him from the study of a great and noble art to the consideration of papers of questions that revealed in every line the fact that the examiners had mistaken definition of terms or extemporaneous delineation of features for a knowledge of principles and discernment of fitness and beauty.

Mr. Millard urged that the whole profession as a body was reponsible for the training of its pupils, although at present that responsibility was not accepted. They saw two bodies occupying the same premises—the one undertaking to examine students, without caring how and whence their knowledge was obtained, and, indeed, emphatically declaring that it was not a teaching body; the other ardently professing to teach its members. For grappling with the problem of education for a great profession, the Architectural Association was now notoriously and ludicrously inadequate. And what wonder that it was so? Unendowed and not genuinely self-supporting it had for years depended for its main working power on voluntary labour, on the surplus energy of a comparatively small minority of its members, given occasionally out of their spare overtime; whilst on the part of the recipients of the benefits derived, the—anything but lavish—expenditure of one hundred and twenty-six pence per annum, with an odd shilling or two extra for class fees, had been supposed to count as a fair contribution to meet working expenses. Worse than being merely inefficient for existing needs, it had been misleading in encouraging the idea that all was well in the profession. At the present moment the Institute, by sheer good fortune, had an exceptional opportunity to not only make some atonement for past weakness, but to secure to itself a sure source of strength for the future, if only it would seize it and offer honourable terms to the Association. A good working alliance between the Institute and the Association presented the only rational solution of the question of professional education. The Association would be doing itself nothing but honour in becoming the educational branch of the Institute, for the prestige and real strength thereby accruing would far more than outweigh any loss of influence or dignity based on feeble and empty independence. He would suggest the establishment of pupil scholarships, similar to what existed for the Bar, whereby successful candidates were enabled to spend a definite period in the chambers of any leader they themselves might decide on reading with, the necessary premium being paid out of the scholarship fund. A fusion of the Institute and Association would mean power to both for real good; the alliance was indeed not only advisable and feasible, but ultimately inevitable.

Mr. Needham Wilson said he saw no necessity for changes. If the educational methods that had obtained hitherto had been so successful, why were they so no longer? What had occurred to disturb the equilibrium of the Association, and to lead its members to believe that it was lagging behind the age? If they were losing ground, how was it the Association now numbered 1,129 members, against 1,052 two years ago; or did that indicate a paper strength represented by the £100 arrears of subscriptions? He took this augmentation of numbers to imply approval of the educational methods, and not an argument in favour of change. The fact that the increase of members was less this session than it was last session, suggested that it was the result of the proposed changes. The only reason that he could see for the proposed changes was the Institute examinations. He had nothing to say against the examination, as far as it went, but he objected to its being made the basis of their educational methods. The chief function of the Association was neither to compete with other organisations as to which should have the honour and glory of turning out academic architects, nor to become a mere cramming machine, nor to usurp the system of pupilage. Its educational functions were distinctly supplementary, and were designed to furnish the student with facilities for studying those subjects which he could do in office hours. He emphatically protested against any educational scheme that would have the effect of doing away with the pupilage system. He denied that academic training would make an architect. As to the admitted diminution in the number of members attending classes, he contended that mere numerical strength was no criterion to judge the class-work by, but the proportion of work done to members present and the nature of such work were the true indications. Analysing the statistics for the past few years, he showed that the lessened numbers in classes were due to the enforcement of rules requiring work from every member. Passing on to consider the reform of the Association, he confessed that much of his antipathy to the educational scheme lay in the fact of its embodying a proposal to raise the subscription—a proposal based on three main statements, viz., that it would be necessitated by the increased cost of the curriculum; that the Association's income was now insufficient for its requirements; and that additional clerical assistance was urgently needed for the secretary, or that a paid secretary must be appointed. As to the first, he condemned the scheme supposed to necessitate it; and, with regard to the second, he criticised the heavy expenditure on the conversazione and soirée each year, suggesting that one of these should be made less costly, and the other abandoned or rendered self-supporting. An ugly item in the balance-sheet was the large amount of subscriptions in arrear. As to the third point, economies effected in either would provide for the extra clerical assistance which was necessary.

Mr. Fleming said he considered that many influences were at work in making it essential, if the Association was to go forward, that it should modify its present scheme of teaching. Of these influences some were internal and some external to the Association, the most important of the former class being the great and growing dissatisfaction of the students working in the classes at the insequential character and superficiality of the instruction imparted. The visitors were too often lacking in fellow-feeling with the students, while owing to the change of visitors the train of thought was continually being diverted, and important branches of subjects were neglected. Another internal influence was the knowledge among the elder men that the educational system of the Association was neither connected nor definite. The

chief external influence rendering a change necessary was the recent development of the Institute scheme of examination, and yet another was to be found in the tendency in certain quarters to regard the Association and its teaching as a temporary expedient pending the establishment of some new collegiate body. A fifth influence was the fact that the new educational institutions known as Polytechnics mostly had classes for the study of building construction at extremely low fees. These classes were generally founded upon the South Kensington lines, and, therefore, treated of building construction as a complete science in itself, and not as it really was, an integral part of the art of architecture. This training engendered a habit of inartistic thought, and it was desirable, therefore, to discourage architectural students attending these classes by making the Association's equally thorough, business-like, and practical, while preserving the necessary interdependence between them and their correlative classes or lectures. The one essential feature in any successful amendment scheme must be a thorough revision and expansion of the curriculum. The proposed curriculum was, he maintained, well thought out, and necessarily independent of other institutions. Its financial basis was sound, as it had for its leading principle that all lecturers' fees and charges, materials consumed in teaching, should be paid for by the student benefited. Indeed, the committee had been temperate and judicious in their estimates, as there was every probability of the estimate proving reliable. He also urged the extreme necessity of raising the contributions of all members to insure the satisfactory execution of the scheme of education, and concluded by endeavouring to estimate the nature of the influence which the new scheme would have upon the future of English architecture. He trusted the profession would hereafter seek some power, not for mere registration or examination, but for a compulsory education which would be far more serviceable than a mere statutory hall-marking; and then, and not till then, might they look forward to a national school of architecture as highly skilled and as efficient as was our national school of medicine at the present day.

Mr. H. O. Cresswell, who proposed a vote of thanks to the readers of the papers, observed that they were equally divided in their counsel, for while Messrs. Pite and Wilson were satisfied with the working of the existing arrangements, Messrs. Millard and Fleming did not at all approve the present system. He was entirely at one with Mr. Wilson in thinking that too much was spent on the conversazione, and in thinking that a charge should be made for the soirée. As to the large amount of arrears, these were not so serious as they appeared on paper, for while subscriptions were technically due in advance, they were generally paid in during the session.

Mr. E. Donovan Webb, of Salisbury, suggested that capital might be obtained by allowing members to compound for subscriptions by one payment.

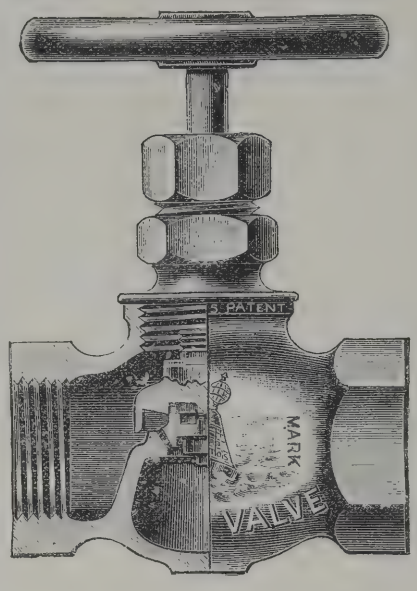
Mr. F. R. Farrow differed from Mr. Wilson as to the injury done to artists by receiving academic training. Instances of artist-architects so trained were, among others, Alexander Thomson, of Glasgow; Charles Garnier, of Paris; H. H. Richardson, of Boston; and Norman Shaw, of London. He seconded the vote of thanks.

Mr. Needham Wilson, in replying, said the four architects named were artists in spite of, and not in consequence of, their training, and Mr. Pite added that it was just because an architect was an artist first that he advocated the training him as an artist.

A NEW ASBESTOS-FACED VALVE.

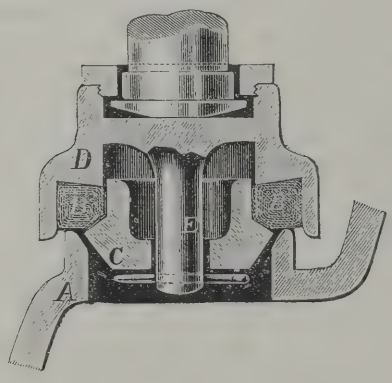
THE valve we illustrate will meet a long-felt want by supplying a flexible seating, which can be renewed if necessary in a few minutes by an ordinary workman at a cost of a few pence and for which no special tools are required. A represents the form of seat in this valve, which, in addition to the ordinary angled seat, has a round edge to the packing-ring B when the latter is brought into contact with it. D is a loose valve, actuated in the ordinary manner by a screwed spindle working in gland of the valve top, which, when first set down, brings the packing-ring B on to the seat A, and for ordinary pressures a perfectly tight and elastic joint is thus made; but by setting the loose valve D hard down, the sliding cone C comes into contact with the angle of seat A, and being free on the guide-stud E is forced into the chamber of the loose-valve D, and by compressing the packing-ring B prevents it becoming damaged.

While the packing-ring B is thoroughly protected by the lower projection of the loose-valve D there is little tendency for D to become



damaged by the passage of steam or water through the valve; but should it even become entirely washed out, a tight metal-to-metal seating is the result, by A, C, and D being brought closely together.

It is claimed that the valve, through its elastic seating, is not affected either by grit, dirt, expansion, contraction, or uneven seating, which makes it alike suitable for the highest or lowest



pressures of steam, hydraulic, or general water-valves by the insertion of packing-rings made of the most suitable material to meet the various uses.

We have seen a 1½in. valve, made under this patent, which has been under test for three months at a steam-pressure of 100lb. per square inch and found to hold perfectly tight, after which it was put under hydraulic test, and by being lightly screwed down held a pressure of 2,240lb. per square inch.

The packing-ring used for these trials was made up specially in asbestos and is still in perfect order, and we are assured it has not been removed at any time during or since the above trials.

NEW SCOTLAND YARD.

THE imposing block of building that has been erected from the designs of Mr. Norman Shaw, R.A., on the Victoria Embankment, is now practically completed. We have already given our readers a brief description of the structure, the outlines of which are of a severe Renaissance character, the lower stories being constructed of Dartmoor granite prepared by convict labour. This high and massive granite basement, surmounted by red brick relieved by bands of Portland stone, with arch and key stones to the windows on the upper stories, and relieved at the angles of the upper stories by circular turrets forming oriel windows, distinguish the building from those in its vicinity, and impart to it, despite some adverse criticisms, a character appropriate to its destination and use. The roofs, with their massive gabled ends and high slated covering broken by chimney-stacks of large proportions, into which the flues are drawn, and which form important features, add much to the dignity of the composition as viewed from Westminster Bridge and the Embankment. The main entrance of Cornish granite is very plain and bold, and leads by a flight of steps to the ground floor. Below this is the basement, covered by groined vaulting of brick, on piers of blue brick, and lighted by areas, an example of solidity and sound workmanship that cannot be surpassed. The piers and walls rest on a substratum of concrete, in some points carried to a depth of 20ft. and more, and in this construction the Opera House and Mansions foundations have been utilised. In some parts the soil and peat have been excavated to a depth of nearly 50ft., as the springs met with were troublesome. The bricks from Cambridgeshire are set in cement in this part, and by the vigilance of the clerk of works the foundations are so solidly constructed that not the slightest settlement has been detected.

Ascending the steps at the main entrance on the west side, we enter a wide corridor, about 11ft. in width, which runs along the embankment block, having rooms on either side. Corridors at right-angles near the ends, and another parallel to the main-entrance corridor, form a hollow block with a central court about 70ft. square. The whole block of buildings is thus a parallelogram, 128ft. towards the Emankment and 160ft. in depth. Near the ends of main corridor are two large staircases of concrete, with treads of Craigleith stone. The front and back blocks have rooms on each side of corridor; the side blocks on the east and west sides have rooms only on the outside of each corridor, the latter being lighted from the centre court. The rooms on either side of the corridors are devoted to the assistant commissioner, interview rooms, and various clerks. Above this is a mezzanine floor for clerks. On the first-floor are the rooms of the chief commissioner, constables, messengers, and clerks, together with waiting-rooms. An upper first floor is obtained over this, and above it is a second floor, with a large telegraph office, 50ft. by 22ft. by 19ft. in height, on the south side. The third floor is appropriated to the executive kitchen department and housekeeper's rooms. The floors in the roof comprise numerous stores, including tailors' shops, tunic-stores, boot-stores, stationery, and other necessaries for so large a department of the public service. The eight or nine floors are very plainly finished, the corridors are generally arched, the walls finished in Keene's cement, the floors of Wilkinson's mosaic with red tile borders. The rooms of various sizes opening from the corridors have Lowe's wood block floors, admirable specimens of workmanship, surrounded by margins of red tile supplied by J. C. Edwards, of Ruabon. The walls are of Keen's cement, with dado moulding; the doors are of two-panel, of equal height, the panels being of papier mâché, fixed on each side of the oak-framed door, with bold projecting mouldings; the windows of each room have casements fitted with Eliot's water bars, and the fanlights over have patent fanlight openers. The ceilings are in some cases panelled and furnished in cement. There are four main staircases, and hydraulic lifts on opposite sides of each corridor; the lifts are the work of the American Elevator Co. The Chief Commissioner's rooms on first floor at the angle, includes one of the angle oriel or turret projections, and has a high dado of walnut. Lavatories and closets are provided in the corridors on each floor. The corridors are heated by hot-water coils and pipes. The whole of the arches over the east basement, and the suite of rooms under the parterres, the foundations, also the gutters, have been covered and lined with Claridge's Patent Asphalte, as we have previously described. One feature worth notice, is that the large cornice has been lined with this asphalte instead of with lead, and we hear that the result is highly satisfactory. The inner court is being paved with Granolithic stone, by Stuart's Granolithic Paving Company. The construction throughout is fireproof. Messrs. Homan and Rodgers have supplied the iron-work for the roof; and Messrs. Measures the

girdering of the floors. Messrs. John Grover and Son have carried out the work in a highly satisfactory manner, under the personal attention of Mr. George Eraut, the clerk of works; and we learn that every stone in the building has been placed on its natural quarry bed.

COMPETITIONS.

The Battersea Polytechnic.—The committee of the South London Polytechnic Institutes have, with the advice and assistance of their consulting architect, Mr. Rowland Plumbe, F.R.I.B.A., just selected six sets of drawings from the fifteen sent them in the preliminary competition for a design for the proposed Battersea Polytechnic. The authors of the six selected designs have now been invited to take part in the final competition in which the drawings will be made to an enlarged scale, viz., $\frac{1}{4}$in. to a foot, in lieu of the $\frac{1}{8}$in. to a foot scale in the preliminary competition. The six successful competitors are: Mr. John Belcher, F.R.I.B.A., Messrs. Henman and Harrison, Mr. E. A. Mountford, Messrs. Roger Smith, Son and Gale, Mr. T. Osborne Smith, and Mr. Sidney R. Smith. The proposed Polytechnic is to cost a sum of £40,000, and will be erected on a site of about two acres, facing the Battersea Park-road. In order to complete the committee's scheme, and fit up the Institute when built, a sum of nearly £10,000 is still required.

Blackburn.—In a limited competition for a new Wesleyan chapel and Sunday school at Mellor, near Blackburn, the design of Mr. Walter Barrow, architect, of Preston, has been accepted.

New York.—The project for the Cathedral Church of St. John the Divine has reached another stage, as the five final designs were sent in on November 1st (last Saturday). The authors of these plans are Messrs. Potter and Robinson, Huss and Buck, Heins, La Farge, and W. Halsey Wood, all of whom are architects practising in the States. The site for the cathedral is a commanding one on Manhattan Island, and therefore will become a landmark overlooking the Harlem plain. Most of the competitors have adopted a rendering of the Americanised style of Gothic, and, if we may credit the reports which have just reached us, their designs are intended to realise the problems of the present in a sublime type of ecclesiastical construction, and thus demonstrate with perpetual significance for the multiplied millions of coming ages, the absolute plasticity, the supreme utility, the growing force and ecclesiologic lines of Gothic consummation, with its artistic unification and inexhaustible resources as the dominant expression of Divine Providence altogether unlooked-for and unknown to the great European builders!!

Oswestry Municipal Buildings Competition.—Twenty-six sets of plans have been received in this competition, and are now in course of examination by Mr. Lockwood, the assessor. The award will be made known shortly.

A new concert hall is about to be erected at the junction of five thoroughfares in Sidmouth. It will cover an area of 1,200ft. by 45ft., and will consist of offices on the ground floor, while on the floor above will be a hall, 60ft. by 35ft., in addition to the space occupied by the stage, and a small hall, 42ft. by 25ft. The work will be carried out for the lord of the manor from plans by Mr. C. Murray, of London and Sidmouth.

Colonel Luard, R.E., one of the Local Government Board's Inspectors, held inquiries on Friday at the villages of Crofton and Walton, near Wakefield, relative to the applications which have been made by the Rural Sanitary Authority for Wakefield to the Local Government Board for permission to borrow £1,850 to defray the cost of supplying Crofton with water, and for £1,400 to provide water for Walton. Mr. Massey, engineer to the rural authority, and others gave evidence in support of the proposal.

The Colles Memorial Hall, which has been erected at Melton Mowbray to the memory of the late Dr. Colles, who was for nearly forty years vicar of the parish, was opened by the Bishop of Peterborough on Friday. The new building, which is situated on the north side of the vicarage, contains a parish hall, reading and writing rooms, a library, gymnasium, and soup kitchen. The hall has been erected by Messrs. E. Clarke and Son, of Melton, whose contract amounted to upwards of £1,000. The architect, whose plans were selected in competition, was Mr. A. T. Draper, of Leicester.

Building Intelligence.

Blaydon-upon-Tyne. — New co-operative stores have been opened here. The building is three stories in height. The design is a free treatment of French Renaissance, broken up with gablets. The stone has been obtained from Gunnerton. The architects are Messrs. Thompson and Dunn, of Newcastle.

London County Council.—At Tuesday's meeting of this council the consideration of the scheme for the improvement of the area between Bethnal-green-road and Shoreditch High-street, called the Boundary-street area, 15 acres in extent, and comprising 20 streets, was resumed. The Housing of the Working Classes Committee had reported that the area comprised 730 houses, and the population, exclusive of those in lodging-houses, was 5,566—viz., 3,370 adults and 2,196 children, who occupy 2,545 rooms. The draft scheme of the Committee was unanimously approved, an amendment providing for the gradual clearance of the area and the rehousing of those displaced having been agreed to. At the same meeting a further stage was reached in the proposals for widening St. George's-place, Knightsbridge, an improvement estimated to cost £32,067, it being agreed to lend at 3½ per cent. one fourth of that amount to the Vestry of St. George's, Hanover-square, that being the amount of that local authority's contribution towards the outlay.

Peterston-super-Ely.—The restoration of this quaint and interesting church, for which a faculty has been granted, has been intrusted to Messrs. Kempson and Fowler, architects, of Llandaff. The work includes a new solid oak chancel-arch, screen, and pulpit, new oak chancel seats, new two-light chancel window, the raising of the east window, and filling both with painted glass, the subjects being "The Crucifixion" and "Faith and Hope," new mosaic floor in chancel and the wall decoration of same, the removal of font to its old position, a new heating apparatus, and the restoration of the tower, &c.

Wednesfield. — The cottage homes which have been erected in Amos-lane, Wednesfield, by the Wolverhampton Board of Guardians for the accommodation of pauper children were formally opened on Tuesday. The homes are built of red brick, with stone facings. The buildings include four homes for boys and four for girls, each having accommodation for thirty children. These children will be under the care of foster parents, two in each home; and while the boys are trained in industrial pursuits, such as shoemaking, carpentering, &c., the girls will be instructed in domestic duties. A superintendent's residence is erected on the left of the entrance, and probationary wards and porter's lodge are on the opposite side. Two playgrounds are provided, and it is eventually intended to have swimming-baths. The cost of the buildings has been £17,000. The architect is Mr. G. Hurst Stanger, C.E., and the builders Messrs. Bradney and Co.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Manchester Society of Architects.—At the annual meeting of the Manchester Society of Architects, held Oct. 30th, Mr. R. Knill Freeman, F.R.I.B.A., was re-elected president. In the Students' Competition, the first prize of seven guineas was awarded to Mr. Roger Oldham, and the second of five guineas to Mr. Harold Brakspeare.

At a special meeting of the Midland Great Western Railway Company of Ireland, held on Tuesday, resolutions were adopted authorising the construction of three new lines, one from Galway to Clifden, another from Maryport to Mulrauny, and a third from Ballina to Killola. The aggregate Treasury grants for these lines amount to £440,000, which will about cover their cost.

The dedication of the Shafto Memorial Tower at St. Paul's Church, Spennymoor, together with eight tubular bells, was performed on Friday by the Bishop of Durham. The tower was erected in memory of the late Robert Duncombe Shafto, of Whitworth Park, Spennymoor. It has been designed by Mr. Henery, architect, Durham, and the contractor is Mr. W. Wardroper, also of Durham. The cost was over £2,000.

Engineering Notes.

City and South London Railway.—This undertaking, the first subway on which electricity will be used as a motive power constructed in England, was formally opened by the Prince of Wales, accompanied by the Duke of Clarence, on Tuesday. The distance traversed by the new railway is about 3½ miles. It begins at King William-street, E.C., and terminates at the Swan, Stockwell, with intermediate stations at the junction of Great Dover-street and Blackman-street, the Elephant and Castle, Kennington-road and the Oval, Kennington, the route being taken *viâ* the Elephant and Castle and Kennington Oval. The up and down lines are absolutely distinct, there being, in fact, two tunnels, and they do not necessarily run side by side, one tunnel being at certain points superposed over the other. After passing under the river the railway runs at a depth of about 60ft. beneath the roadway, which it follows throughout. Not only has there been little outlay on compensation to "frontagers," but the tunnelling is done for nearly the whole distance through a uniform stratum of clay. We have previously described the method of construction by means of a circular wrought-iron shield in six segments the full size of a single tunnel (11ft. 6in.), driven through the clay by hydraulic power. The hole thus formed was converted into a tunnel by lining it with half a dozen cast-iron plates, so shaped as to form segments of a circle having a diameter slightly less than the shield, and these were bolted together, the iron being protected on the outer surface by forcing cement grouting through holes in the plates, so as to form a solid concrete jacket to the tube. The railway is of the ordinary 4ft. 8½in. gauge, and the sleepers are laid without ballast directly on the lines, a third rail (an insulated flat bar of steel) being used as the conductor. Each train will consist of an electro-motor and three carriages, and a uniform 2d. fare will be charged. The railway, which has cost £220,000 per mile, was designed by the engineer, Mr. J. H. Greathead, and the work has been carried out under his superintendence, with Sir John Fowler and Sir B. Baker as consulting engineers, and Mr. Basil Mott as resident engineer. The contractors are Messrs. Walter Scott and Co., of Newcastle, who succeeded Mr. Gabbutt. The electrical installation has been carried out by Messrs. Mather and Platt, of Manchester, from plans by Drs. Edward and John Hopkinson.

CHIPS.

A public meeting of the ratepayers was held at Midleton on Monday for the purpose of considering the advisability of promoting a new scheme for erecting labourers' cottages throughout the union, adopted to the guardians at a cost of £20,000. The ratepayers unanimously endorsed the scheme.

At a meeting, held at Eastbourne on Monday, it was resolved to erect a memorial institute in honour of the late Canon Pitman, who was for 60 years vicar of Eastbourne. The scheme will cost about £2,000.

A special meeting of the Malvern Local Board was held on Friday to consider the expediency of promoting a Bill in Parliament authorising the board to spend about £40,000 in improving the water supply of the town. It was decided to proceed with the scheme for acquiring the Rabbit Warren estate.

Mr. E. W. Mountford, F.R.I.B.A., of 17, Buckingham-street, Strand, W.C., after being there for 10 years, has now removed to larger offices upon the first floor at No. 17. The house is upon the same side of the street as No. 22, but a few doors nearer the Thames Embankment.

Messrs. E. Appleton and Son, civil engineers, Torquay, have been instructed to prepare schemes for the drainage and water supply of Hatherleigh, Devon.

The list of receiving orders announced in Tuesday's *Gazette* includes the name of Walter Graham, of Air-street, W., architect.

A memorial screen, designed by Mr. C. H. Rew and executed by Mr. H. Hems, of Exeter, has been placed between the south transept and St. Catherine's Chapel in Berkhampstead Church.

The Bradford School Board adopted on Monday plans prepared by Mr. E. P. Peterson, for the enlargement of Drummond-road school by 312 places, at an estimated cost of £6 per head.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 8½, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. PASSMORE EDWARDS.

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One Pound per annum (post free) to any part of the United Kingdom, for Canada, Nova Scotia, and the United States, £1 6s. 6d. or 5 dols. 50c. gold. To France or Belgium, £1 6s. 6d. or 26fr. 30c. To India (via Brindisi), £1 10s. 4d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Scholastic advertisements) is 6d. per line of eight words, the first line counting as two, the minimum charge being 4s. 6d. for 4½ words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 6s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph Advertisement inserted for less than 5s.

SITUATIONS.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is ONE SHILLING for TWENTY-FOUR WORDS, and SIXPENCE for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on THURSDAY. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of VOLS. XLII., XLIX., L., LI., LIII., LV., LVI., and LVII. may still be had (price Twelve Shillings); all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volumes just ended should order at once, as many of them soon run out of print.

BRETHREN.—C. of S.—A. Co.—W. and J. B. F.—J. W.—G. W. and Co.

E. G. G.—We cannot tell you whether the Arnott stone is still made or not. We have seen no notice of it for a long time.—J. B.—Very good stuff indeed. You should go to Spindle and Co., 46, Cheapside.—PRACTICAL.—A Builder.—Inquire at R. [illegible], Bedford-street, Strand.—PARTY WALL.—[The party, or division, wall between the two cottages belong, in all probability, to both parties, A. and B., as owners in common. Acts of ownership will be the best evidence of the fact. It cannot certainly under the circumstances without giving notice to A. The common user of the wall by both proprietors is sufficient evidence of the wall being common property, as we have no doubt this is. Consult the by-laws of Midlock.]

IN our review of Mr. W. A. Piccoli's new book, "Outlines of Compensation Laws," in our last issue, p. 632, the words now printed in italics were omitted. "This notice to treat may . . . must not be followed by an agreement." The sections of the Act of 1845 referring to arbitration are 23, 25, and 27.

"BUILDING NEWS" DESIGNING CLUB.

ANDREW R. HEDDACK.—[If you read the instructions again for Subject A. you will see that the frontage is in a street where there are, of course, adjoining buildings. Light therefore, must be obtained secondary to the front and from rear. It is only an entrance to the premises from the rear which is not objectionable.—A. UNIVERSITY.—See above answer. The 15ft. in height for the upper studio may run up into the roof above the plate line, but not more than one-third up the roof. Details are left to competitors.—E. BRIGHTON.—No right of entrance from and return on right of plan.—LEONARD H. DUNCH.—[Top lights may be used, of course; but for schools of art classrooms they are not necessary.]—R. P. LEWIS.—[Open fireplaces look cheerful, but waste space in such studios.]—J. PAULL.—[The large blackboard is a necessary fitting for the room.]

Correspondence.

THE ALLEGED COMPETITION FARCE AT BRISTOL.

To the Editor of the BUILDING NEWS.

SIR,—In reply to a letter headed "A Competition Farce at Bristol," in your issue of 19th inst., by three designers, "Crux," "Equity," and "Double Circle," were submitted to me for adjudication.

The design submitted by "Double Circle" was incomplete, there being no sections or side elevations, and the plan was so inferior to the others that I at once placed it third in order of merit.

The alternative designs marked "Equity" were in every way inferior, even taking the better of the two to the design submitted by "Crux." I append two extracts from my report bearing upon the point of cost raised by "Not in It," and allow the public to form their own view:—

"Certainly neither of the first two competitors could get the work as shown on their drawings, and including everything required by your conditions, carried out as it should be, for the money limit; and whilst "Crux" boldly asserts this fact and gives his reasons, "Equity" makes a statement of cost within the amount, and gets it backed up by two contractors; but if he has any knowledge of Bristol prices, he must know how impossible it would be to do this, and at the same time do good work. I venture to assert that neither of the two contractors would sign a contract binding themselves to carry out the work for the estimate given.

"I think, however, your price is fixed too low for the requirements you ask, especially taking into consideration the situation of the site and the class of congregation that would worship in the building when erected, and I strongly advise your adoption of the plans of "Crux" with modifications."

As will be seen, by putting the cubical contents at the low estimate of 5½d. per foot cube, the respective prices would be, "Crux"—

157,530c.ft. at 5½d.	£3,615	18s.	9d.
Less suggested modifications ..	950	0	0
	2,665	18	9

"Equity"—

Design A. 156,370c.ft. at 5½d.	£3,629	6s.	5d.
Modified Do. B, 124,457c.ft. at 5½d.	2,851	13	7

It follows without saying that neither of the two first were within the limit of £1,800. The third competitor's designs could not be cubed, there being no sections submitted, but judging from his perspective with the front elevation and plan the assumption was that this design would have worked out at a higher figure than either of the others.

It appears from the letter of "Not in It" that the committee have followed my advice, had modifications made, and received a tender for £2,748, or within a small margin of my approximate estimate of £2,666, as above.—I am, &c.,

ARCHITECT.

CHIPS.

An hotel is about to be built by a limited liability company between Cadoxton and Holton. Messrs. Seward and Thomas, Cardiff and Cadoxton, are the architects, and the capital of the company will be about £7,000.

While the celebrated group of Theseus and the Centaur by Canova was being moved from the Volksgarten of Vienna to the new Museum of Art in that city on Friday, the roadway gave way under the great weight, and the mass of marble was overturned, with the result that the figure of Theseus was shattered. All the fragments were recovered, and will be cemented together.

A Sailors' Institute is being built at Cadoxton-Barry from plans by Messrs. James and Morgan, Charles-street Chambers, Cardiff.

A new organ, which has been built in Bromsley Church, Northumberland, was opened on Friday. The new instrument has been built by Messrs. Wordsworth and Co., of Leeds, and has cost £170.

The museum in Dyke-road, Brighton, containing the unique collection of British birds formed by the late Mr. E. T. Booth and bequeathed by him to the town, was formally handed over to the Corporation on Monday.

Mr. J. A. Shuttleworth, of Haileswage Hall, laid last week the key stone of one of the seven arches of the viaduct on the Dove and Chinley Railway. The viaduct will be 440ft. long and 60ft. high, the arches being 40ft. span, and built of Millstone Edge stone and lined with blue bricks from Staffordshire.

On Monday evening Prof. R. A. M. Stevenson, who occupies the chair of art at University College, Liverpool, personally conducted a large number of members of the Liverpool Art Club and others through the Autumn Exhibition in that city. In his comments on a number of pictures showing advanced modes of treatment, Mr. Stevenson revealed his sympathies with the Impressionist school.

Intercommunication.

QUESTIONS.

[10424.]—**Book-keeping.**—What is the best work published on this subject suitable for contractor. Also for job-master?—ENQUIRER.

[10425.]—**Bracket.**—Wanted formula for calculating strength of wrought-iron bracket, bolted to side of beam, carrying projecting plate and load over.—QUERIST.

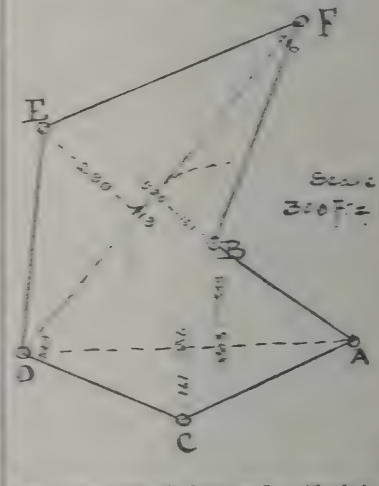
[10426.]—**Bridge Construction.**—Will any experienced reader kindly give me the names of really good books on bridge construction.—(1) girder and truss bridges, (2) brick or stone bridges, and which deal (mathematically and also in an elementary manner, and which would be of service in making working plans of bridges for ordinary spans?—PERSEVERING STUDENT.

[10427.]—**Masonry.**—Can anyone describe the joint when it is better—to set stone in its "quarry-bed"? I think a masonry mason once told me this solidities should be worked with the bed upright; but I made no note at the time, and should like to see some practical hints on this point.—A LOOKER-ON.

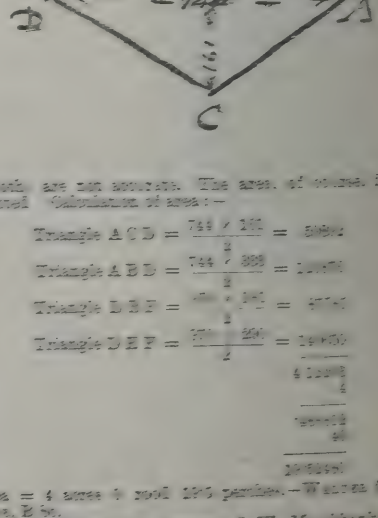
[10428.]—**Church Estimating.**—Will some reader kindly inform me what is the best way to estimate the cost of a church, and what is the price taken per sitting?—H.

REPLIES.

[10417.]—**Surveying.**—I have not seen Baker's work, but the following diagram explains the planning. The



survey has evidently been made with chain and cross-staff. The difficulty in accurately plotting, supposing the perpendiculars are truly so (and the area is calculated on this assumption), is that the figures 903, 520 are in other



words are not accurate. The area, of course, is not altered. Calculation of area:—

Triangle A C D = $\frac{744 \times 520}{2}$ = 193440

Triangle A B D = $\frac{744 \times 903}{2}$ = 335916

Triangle D B F = $\frac{\quad \times \quad}{2}$ = 47741

Triangle D E F = $\frac{\quad \times 290}{2}$ = 104450

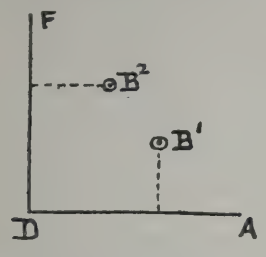
4 [illegible]
4

[illegible]
96

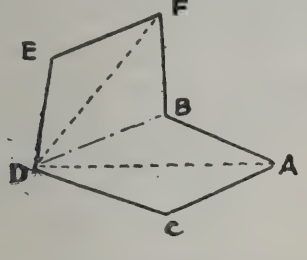
Area = 4 acres 1 rood 1915 perches.—WILLIAM CARPENTER, Bath.

P. L. (Gray, H. G. Sarnen, J. W. Middleton, and others have also answered.—ED.]

[10417.]—**Surveying.**—The example of surveying from Mr. T. Baker's work on "Land and Engineering Surveying" may be plotted as follows:—The first line,



A D, is plotted in a westerly direction for a distance of 744 links, with the offsets to the right and left. This line is a diagonal. The next line, D F, is to be plotted to the right of D; but not necessarily at right angles to it. In the first instance, it may be plotted at right angles, with this result: The offsets from the lines A D, D F, to the point B^1 do not by this construction indicate the same point. If the line D F be made to revolve on the point D



until the point B^2 coincides with the point B^1, then the lines will be in true position, and by joining the points A C D E F B the boundary of the field will be obtained. The figure is then reduced to two trapeziums, the diagonals and offsets of which are given, and the area may be calculated in the usual manner.—J. P. Greenwood.

[10416.]—**Association of Public Sanitary Inspectors.**—In reply to your correspondent "R. W.," and for his information and that of others of your readers, I beg to say that the Hon. Secretary, Mr. S. C. Legg, 117, Powerscroft-road, Clapton, E., will be pleased to hear from any sanitary inspector desiring to join the Association of Public Sanitary Inspectors of Great Britain.—Edward Tidman, Member of Council.

[10419.]—**Horizontal Flue.**—Insert a large batswing gas-burner (or two, if necessary) in the upshaft, closing the flue with a door having a piece of talc inserted to enable the flame to be seen. This is immensely more active than the method you propose. —John Glendenning.

STAINED GLASS.

Bristol Cathedral.—The new window which has been placed in the north transept of the cathedral in memory of Edward Colston was unveiled on Thursday in last week. The window takes the place of one which it was found necessary to remove because of its decayed condition. The design is by Mr. J. L. Pearson, R.A., architect to the Cathedral Restoration Committee, and the stained glass work was intrusted to Messrs. Powell and Sons, of London. Running along the lower part of the window is a memorial inscription, and above this are six panels containing shields representing the Arms of Edward Colston, the Arms of the Society of Merchant Venturers, the Badge of the Dolphin Society, the Arms of the See of Bristol, together with those of the City of Bristol, and of Christ's Hospital, where Colston was educated. These shields are surmounted by the Colston motto: "Go and do thou likewise," in connection with the six scenes of the parable of the Good Samaritan. The next tier illustrates the Sermon on the Mount and Christ Blessing Little Children, each subject being illustrated in three lights. Above this again there are six New Testament philanthropists—viz., the Centurion, St. John the Apostle, Joseph of Arimathea, St. Barnabas, St. Paul, and Cornelius. The canopies of these figures and the panels below are studies from examples of the 14th century. The upper tracery of window contains a design illustrative of Christ on His Throne surrounded by the symbols of the four Evangelists. The new window measures 35ft. by 16ft., and a space of 17ft. is allowed between the floor and the base.

The housing of the poor and the provision of sanitary dwellings have lately attracted much consideration in Salford and Manchester, the local death-rate being very high compared with other large cities. The Salford Council on Thursday unanimously adopted a scheme for demolishing insanitary property, involving an expenditure of £50,000, and a prospective outlay of £400,000.

WATER SUPPLY AND SANITARY MATTERS.

Dublin.—Serious defects have been discovered in the sanitary system of the King's Hospital Blue-coat School, Blackhall-place, Dublin, and a report has been obtained from Mr. W. Kaye Parry, M.A., civil engineer, Dublin, upon the subject. The Governors have decided to completely reconstruct the sanitary arrangements from plans and specifications prepared by Mr. Kaye Parry.

Glasgow.—The Glasgow Waterworks Committee made an inspection on Friday of the extension works for the supply of the city at Strathblane, and subsequently inaugurated the New Mugdock Tunnel by directing the water flowing from Loch Katrine through it. The contractors, Messrs. Morrison and Mason, commenced the contract for the tunnel in the spring of 1886, and, owing to the old tunnel having been running its full capacity of forty million gallons per day, the work has been hastened forward as speedily as possible. The new tunnel is 1½ miles in length with a fall of 10in. per mile, and is capable of discharging about 80 million gallons per day. It runs parallel with and some 22 yards to the east of the old one. Three years were spent in piercing the ridge of hills between the Blane and Allander valleys, and fifteen months were occupied in concrete lining and dressing, and the bottom is lined with concrete for the whole length.

Matlock Bath Waterworks.—The Local Board of Matlock Bath have decided to increase the water supply of the town. A large supply is required in summer to provide for the visitors and excursionists. Mr. W. H. Radford, C.E., of Nottingham, has been called in and requested to prepare a scheme for the local board.

Maldon.—The works of sewerage and of sewage disposal for the town of Maldon, Essex, were opened by the mayor and corporation on Tuesday last, the 4th inst. The works have been carried out from the designs and under the superintendence of Messrs. R. B. Grantham and Son, of Northumberland Avenue, by Mr. G. Osenton, the contractor, Mr. John Wood acting as clerk of works. The town council has determined to form a promenade along the frontage of the river Blackwater, and to lay out a recreation ground in connection therewith.

Pollution of the River Calder.—On Tuesday Mr. J. T. Harrison, M.Inst.C.E., held a Local Government inquiry at the board-room, Earlsheaton, near Dewsbury, relative to an application by the Soothill Nether local board for sanction to borrow £12,000 for the purpose of carrying out a complete scheme of main drainage and sewage treatment. Mr. W. C. Handley, clerk to the board, stated that the population of the district was about 5,750, the effective rateable value £13,113, and the amount of the present debt £1,530. Mr. Malcolm Paterson, M.Inst.C.E., Bradford, the board's engineer, produced the plans and sections of the scheme, and explained the details. The scheme is entirely by gravitation, there being two main outfall sewers meeting at one point, and the method of treatment proposed is chemical precipitation in three tanks working separately, combined with filtration on land specially prepared to a depth of 5ft. or 6ft., the total area being 4 acres. The principal features of the scheme are (1) the separation of the storm-water from the sewage; (2) utilisation of the fall of the sewage for mixing chemicals; and (3) the taking of the manufacturing refuse into the sewers, thus striking at the root of river pollution, a step which, in view of the terrible state of the Calder, will doubtless be watched with interest by the West Riding County Council. The inspector advised the acquisition of the land at once by conditional agreement, and stated that in no case would the Local Government Board sanction the discharge of sewage clarified by precipitation without its passing over land, not even the supernatant water periodically discharged before cleansing the tanks, and further stated that with this proviso he would recommend the granting of the application.

Worcester.—At the Guildhall, Colonel Ducat, R.E., an inspector of the Local Government Board, commenced an inquiry on Tuesday into the question of sewage disposal, which has for a long time past engaged the attention of the authorities in Worcester. The notice announcing the holding of the inquiry set forth that the town council had applied to the Local Government Board for sanction to borrow £50,000 for the construction of sewage-disposal works, £580 for the construction of a new street, and £300 for purposes of street improvement. The schemes are opposed by a large body of ratepayers, who, like the corporation, are represented by counsel. Mr. Hastings, M.P., is watching the proceedings on behalf of the Dean and Chapter.

Alterations have been made to Colney Hatch Lunatic Asylum, including the ventilation, which is now carried out on the Boyle system, the extraction of the vitiated air being effected by the latest improved form of the self-acting air-pump ventilator.

LEGAL INTELLIGENCE.

Damages for Misrepresentation as to House Drainage.—On Monday an action was tried by Mr. Justice Cave and a jury, in which the plaintiff, Mr. Farries, sought to recover damages from Mr. Hill, the trustee of a house in Stanstead-road, Forest-hill, for having let him the premises when in an insanitary condition. The plaintiff's family, after entering the house, were attacked with both scarlatina and diphtheria, from which one of his children died. The unsanitary state of the house was found on investigation by the sanitary inspector to be due to the system of connecting the waste-water pipes with the soil-pipes. The defendant's case was that he did not, as alleged by the plaintiff, absolutely guarantee the house to be in a perfectly good sanitary condition, but only expressed his belief that it was in such a condition. The jury awarded the plaintiff £85 damages, and decided in his favour upon a counter-claim for rent made by the defendant.

An Architect-and-Builder on Mortar.—At Wandsworth Police-court last week, Andrew Saunders, a builder, Graham-road, Wimbledon, was summoned by the local board for using, in the erection of a house in Worple-road, mortar which was not compounded of good lime, and clean, sharp sand, or other suitable material. F. W. Pearce, assistant surveyor to the local board, stated that in September he inspected the building and found two sorts of mortar in use. No complaint was made of the mortar which was used on the outside face of the external walls, but that used on the inside face was of bad quality, black mould being mixed with it in the proportion of one in three. Charles H. Cooper, surveyor to the board, said the mortar produced was decidedly bad, and easily crumbled between the fingers. The mould was totally unfit for the purpose for which it was used. For the defence, William Stansbury, "surveyor, architect, and builder and contractor," of Wandsworth, was called, and stated he had been in business twenty years, and had erected hundreds of houses. He had inspected the defendant's building, and found that very good mortar was used. So far from bad material being used in portions of the walls which were out of sight, if he complained of any, he should complain of that which was outside. The sample produced crumbled because it was removed from the wall before it had had time to set. It was composed of good sharp stuff and lime. Thousands of tons of it were used round Battersea. It was 90 per cent. better than that used by many people. He meant ninety out of every hundred would use worse mortar. He was satisfied with it, and he surveyed hundreds of houses every year. Cross-examined: Built by other people?—Yes. Is the material which the surveyor calls mould clean, sharp sand?—I can't say it is. It is a mixture of mould, ash, and dust. In imposing the full penalty of £5 and costs, Mr. Denman said the defendant's evidence entirely failed to satisfy him that the samples were not fair tests of the mortar which was being used on the premises. It was clearly proved that it was not proper mortar.

Re George Wall.—The bankrupt, who traded as a builder and contractor in Carlton-road, Kentish Town, under the style of Wall Brothers, applied on Tuesday to pass his public examination. He had been largely engaged in the erection of buildings for the London School Board, and claims to the amount of £13,000 (which the bankrupt disputes) have been made by the Board on the ground that the work had not be carried out in accordance with the contracts. The statement of affairs showed total liabilities £25,360, of which £13,088 are expected to rank, and assets £4,462. The bankrupt attributed his failure to losses on contracts occasioned by a rise in the price of materials, to miscalculations as to the cost of labour, and to his expenses having lately exceeded his profits. The bankrupt passed his examination.

A monument has been erected in the south or Clothworkers' aisle of the parish church of Tavistock, in memory of the Bredalls family. It is Jacobean in character, and has been carried out by Mr. Harry Hems, of Exeter.

The county council of Suffolk have raised the salary of Mr. H. Miller, jun., of Ipswich, who was was appointed county surveyor last year in succession to Mr. H. M. Eyton, retired, from £250, with £100 for expenses, to an inclusive sum of £400 a year.

The new church at Langley, near Birmingham, was consecrated last week. Messrs. Osborn and Reading, of Birmingham, with Messrs. Wood and Kenrick, of West Bromwich, have jointly acted as architects, and the building operations have been intrusted to Mr. T. Rowbotham, of Birmingham. The church will accommodate 617. Its design is a simple treatment in brick and stone of the Early Decorated style. The nave is 75ft. by 24ft., and the aisles 75ft. by 11ft. 3in. The chancel is 35ft. 6in. by 24ft. On the north side are the choir and clergy vestries, also the organ chamber; and on the south side an aisle 22ft. 9in. by 19ft. 3in.

Our Office Table.

Mr. Woodcock, who has liberally offered to bear one-half the cost of erecting a campanile to house the bells of St. Michael's, Coventry, has arranged with Mr. Alfred Waterhouse, R.A., Mr. R. Norman Shaw, R.A., and Mr. Ewan Christian to visit Coventry at an early date for the purpose of forming an opinion as to whether a well-designed campanile can be erected near to St. Michael's Church, without interfering with the architectural beauties of the towers and spires of St. Michael's and Holy Trinity, and in the event of their opinion being in the affirmative, then to select the most advantageous site for such proposed tower. The visit of inspection was to have taken place yesterday (Thursday), but Mr. Waterhouse wrote us on Tuesday, informing us that it has been postponed.

The death is recorded, on the 20th October, at his residence in Hampstead, of James Marjoribanks MacLaren, architect. He was the son of Mr. John MacLaren, J.P., of Middleton, Perthshire, and was 37 years of age. He served his articles in the office of the late Bailie Salmond, Glasgow, and proceeding to London, assisted, amongst others, Messrs. J. J. Stevenson and Mr. Richard Coad, the latter having been Sir G. Scott's chief assistant on the designs of the Albert Memorial. For some time Mr. MacLaren acted as Mr. Coad's partner, afterwards he began on his own account in London, and his chief successes in competition were St. Michael's Church, Crieff (this, however, not executed); Presbyterian Church, Dulwich; new wing to High School, Stirling; and recently he was associated with Mr. A. Stewart, C.E., and Mr. W. Dunn, architect, in obtaining the first premium for the Watkin Tower. The principal of his other works are, houses at Grangemouth for Messrs. MacLaren and Fairlie, alterations at Ripple Court, Kent, for Col. Sladen; house at Ledbury, for Mr. M. Biddulph, M.P.; Town Hall, Aberfeldy, Perthshire; hotel and lodges at Santa Catalina, Las Palmas, Canary Islands; and estate work for Sir Donald Currie, K.C.M.G., M.P., &c.

Mr. A. B. Mullett, of Washington, the most noted of the men who have successively held the position of Supervising Architect to the U.S. Treasury Department, died by his own hand on Monday, the 20th ult. He had been for a year mentally afflicted, and recently his malady had taken a turn for the worst. Mr. Mullett went to Washington from Ohio, at the invitation of Chief Justice Chase, soon after the close of the War. He had been in early life a carpenter and builder; but his extraordinary energy and capacity fitted him, in the opinion of the U.S. Government, for directing the public work, and he was first made assistant supervising architect, and, soon after, promoted to the chief place. Under his administration a great deal of the most costly public work in the State was carried out. The great cities of New York, Boston, Chicago, and Cincinnati, besides smaller ones, needed to be provided all at the same time with post-offices and Government buildings, and all that untiring industry and energy could do to forward the work was done by Mr. Mullett. His work was severely criticised, and he was compelled to retire from his post, but was retained in the Government service as special inspector. A few years later, when his old post was again vacant, the Government proposed to reappoint him; but during a long delay before the appointment was completed, Mr. Mullett expressed his impatience to a reporter, with the result that his name was erased from the list of candidates for the position. Mr. Mullett remained in Washington, and soon gained a considerable private practice. He attempted to enforce a claim for compensation for designing and supervising the immense building of the State War and Navy Department, which, as he maintained, he was called upon to carry out as a private architect, and not as a Government official; but the decision, after appeals, finally went against him. Although entrusted with the expenditure of almost countless millions of public money, he lived modestly on a very meagre salary, and died in financial straits.

A petition from the Society for the Preservation of the Monuments of Ancient Egypt has been drawn up for presentation to the Prime Minister, and now lies for signature at the rooms of the society, 9, Buckingham-street, Adelphi. It states that the destruction of the ancient monuments is a matter which has called forth a strong expression of public opinion lately, and urges that it is impossible to regard the obliteration of documents relating to the earliest recorded civilisation and works of art of rare beauty with feelings other than those of shame and indignation. Unhappily, the destruction which has been in progress during centuries has of late years been carried on with increased intensity. The growing prosperity of the country has created a demand for building materials, and the ancient monuments are now resorted to as quarries. Miracles of the sculptor's art and vast inscribed wall spaces are broken up for rubble or cast into the lime-kiln. But the worst cases of destruction have arisen from other causes, as in the recent notorious mutilations at Beni-Hassan. The petitioners are of opinion that the devastation can only be prevented by placing the monuments under proper inspection. They plead that Lord Salisbury will direct his agent at Cairo to move the Egyptian Government to appoint an English official inspector, who should be instructed to submit yearly reports of his proceedings.

On Monday Lord Dartmouth opened the new Technical Art and Industrial Museum at Hanley, and an elaborate souvenir of some 100 mottoes painted on the friezes of that building has been published by the architect, Mr. W. L. Sugden, whese taste in their selection is worthy of comment, ranging as the quotations do from the prophets and writers of the Scriptures, both old and new, as well as modern popes, bishops, painters, poets, and ancient Persian proverbs. Emerson, Ingersoll, Swift, and Thomas Hobbes are laid under contribution, and much interest has thus been added to the decorative treatment adopted in the structure, which these wise and elegant sayings elaborate. The cover of the little memento pamphlet is designed in a Renaissance style, slightly Rococo in its mannerism, but nevertheless cleverly varied in the balance of its composition, and appropriate in character. Inside a plan of the new building is given, with some sections of the galleries, though we are not shown what the exterior of the building is like. At the end, a short general essay on Technical Museums is given, and the advantage of such institutions is insisted upon. We have described this particular building very recently in our pages, and so need not repeat here what has already been said about its appropriate and useful character. The brochure to which we have now referred is artistically produced, capitally printed, and is sold at 6d. a copy.

Messrs. Walker and Roberts, of Liverpool, have presented to the Bootle Museum a screen of ornamental woodwork, so constructed as to show the decorative value of seventeen kinds of woods. It is thus described on the engraved brass plate which it bears:—"Fancy wood screen presented by Messrs. Walker and Roberts, timber merchants, Liverpool. The screen has been constructed to show the decorative or ornamental value of seventeen different kinds of wood. The floor is in teak, with borders and centres in walnut, mahogany, satinwood, cedar, and ebony. The figures of trees on the screen are water-colour drawings of the species which furnish the wood for the panels underneath—oak-tree above oak panel, pine-tree above pitch panel, and so on with each. There is a row of smaller panels above, each bearing the name of the kind of wood of which it is made. Surmounting the whole is a balustrade supporting a moulded cornice. In the arcade are introduced some finely-worked carvings of the foliage of different trees; and the individual effect of the English oak, the Indian teak, and the American walnut is seen in the framework of the back and each side of the screen respectively."

The annual report of the City and Guilds of London Institute shows that at the recent examination the total number of worked papers was 6,781, as against 6,606 in 1889. Of these, 3,507 obtained passes, as against 3,532 in 1889, showing a slight decrease in the number of successful papers. This decrease is mainly due to the failures in Mechanical Engineering—a subject in which the largest number of candidates always present themselves. This year the number of individual candidates was 6,667, against 6,448 in 1889. Of these, 3,456 succeeded in satisfying the examiners, 51 in two subjects. Last year the corresponding numbers were 3,455 and 77. The general percentage of failures has increased from 46·5 to 48·2. In Plumbing 569 papers were submitted, of which only 233 satisfied the examiners, showing a percentage of 59·0 failures; whereas in Carpentry and Joinery, out of 707 papers, the failures numbered 37·4 per cent.; and in Brickwork and Masonry, with 120 papers, the failures were only 29·1 per cent.

A number of applicants for registration by the Worshipful Company of Plumbers, under the rules of the National Training and Registration of Plumbers, were examined at the Guilds' Institute on Monday. There were present applicants from most of the districts of London, as well as from such distant places as Northampton, Lowestoft, Norwich, Shipston-on-Stour, &c. The examinations, while not unduly severe, were such as to thoroughly test the manual skill and theoretical knowledge of the candidates, each of whom, in addition to executing such practical work as pipe-bending, joint-making, lead-laying, &c., was required to answer a set of questions relating to the properties and qualities of the various materials employed by plumbers, external and internal constructions, sanitary arrangements, and water supply. Only half of the total number of candidates succeeded in passing the full examinations.

MEETINGS FOR THE ENSUING WEEK.

Tuesday.—Society of Architects. Inaugural Address, by the President, Robert Walker, of Cork. St. James's Hall, Piccadilly. 7.30 p.m.
Institution of Civil Engineers. "Steam on Common Roads," by J. Maclaren. 8 p.m.
Royal Society of Antiquaries of Ireland. General Meeting at Dublin.

The Society of Architects.—The First Ordinary Meeting of the Society of Architects for the Session 1890-91 will be held at St. James's Hall, Piccadilly, W., on Tuesday, Nov. 11th, 1890, at 7.30 o'clock p.m., when the President, Mr. R. Walker, A.M.Inst.C.E., will deliver the Opening Address of the Session.

Edgar Farman, Hon. Sec.
G. A. T. Middleton, Sec.

Trade News.

WAGES MOVEMENTS.

St. Alban's.—During last week a difference arose between a certain section of the masons employed by Messrs. Longmire and the foreman at the works on the Abbey, which resulted in the masons coming out on strike. The principal cause of difference was an attempt on the part of the foreman to reduce the time allowed for dinner from an hour to half-an-hour, which was resented by the men as contrary to the rules of the Operative Masons' Society.

CHIPS.

The National Provincial Bank of England, Poole, is warmed and ventilated by means of Shorland's patent Manchester stoves, supplied by Mr. E. H. Shorland, of Manchester.

The church at Dormans, East Grinstead, has received an addition to its stained glass of a fine window, from the studio of Mr. Taylor, of Berners-street, the gift of a friend of the vicar.

Mr. William Dawes, architect, of 7, Oxford-circus-avenue, London, and 2, Cooper-street, Manchester, has taken Mr. Francis Frazer Hoyland into partnership, and the style of the firm will in future be Dawes and Hoyland.

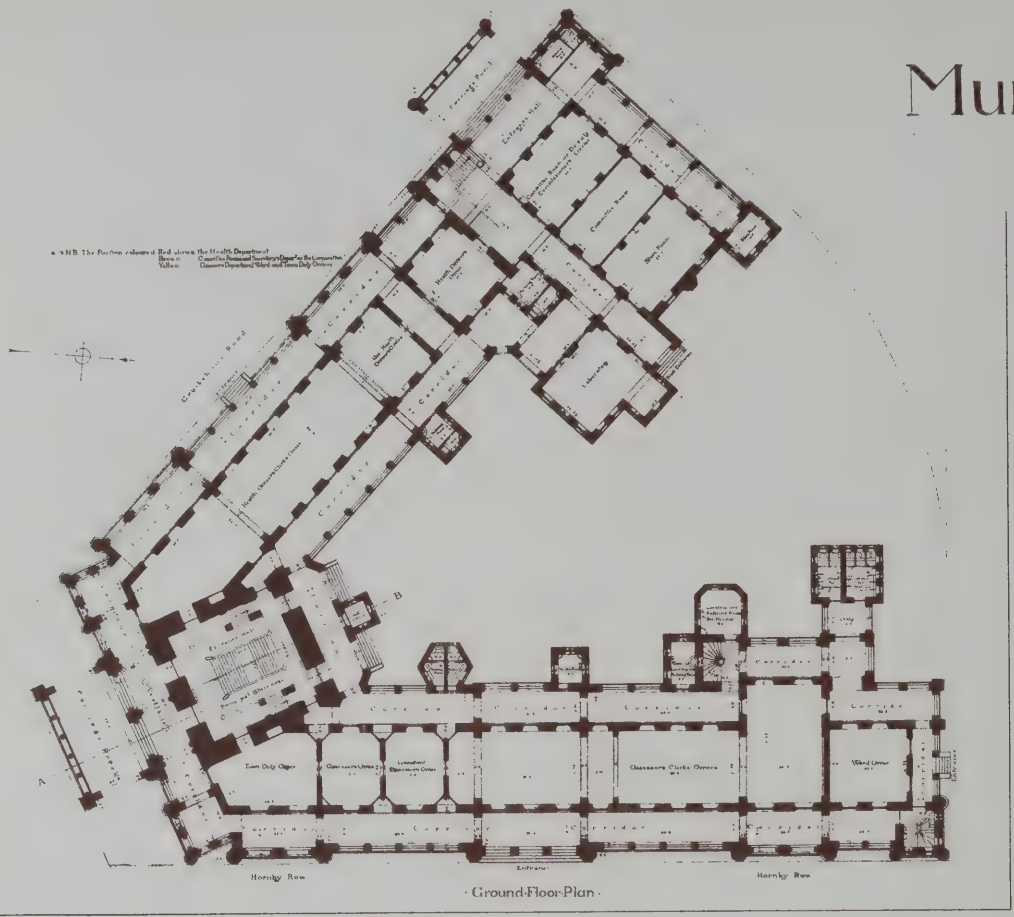
A discovery of considerable artistic importance has just been made at Milan. In the process of scraping some walls at the hospital, there has been brought to light a copy of the famous "Last Supper" of Leonardo da Vinci. The newly-found fresco (which measures 20ft. 3in. by 10ft. 2in.) seems to be a replica to a slightly smaller scale of the composition as originally painted by Da Vinci, and contains details which have disappeared from the original in the course of much maltreatment and partial restorations, notably, some partly legible names and inscriptions traced on the borders of the draperies. It had long been known that in 1502 one Glaxiate was paid 26 Milanese pounds to make out a copy in the hospital, but all trace of the works had been lost.

A new bank for the Cornish Banking Company has just been completed in Queen's square, Penzance. Mr. J. W. Trounson, of that town, is the architect, and Messrs. Wynn and Son, of Helston, were the builders; the cost was £1,200.

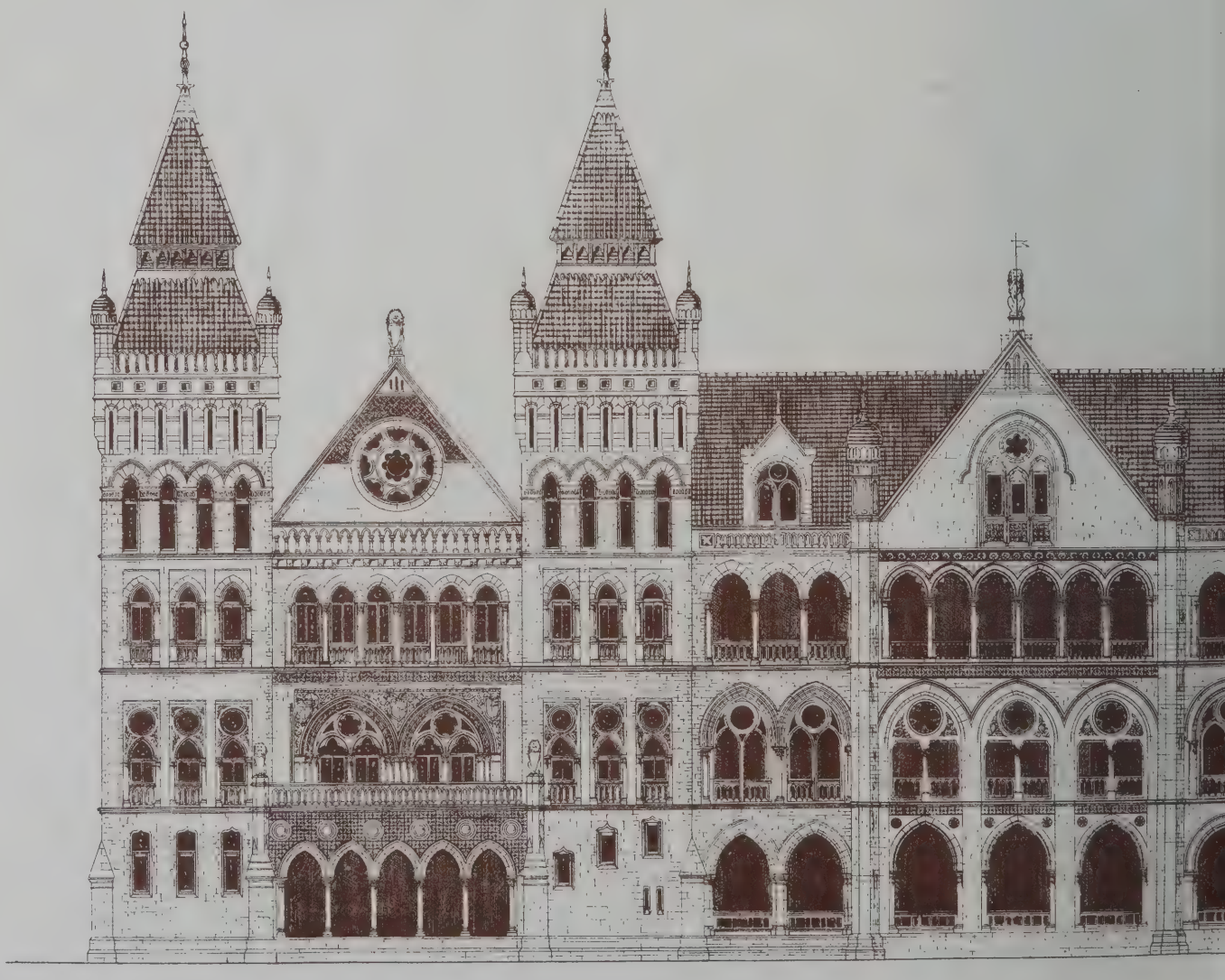
A stained-glass window, the work of Mr. Kemp, of Brighton, has been placed in York Minster as a memorial of the late Hon. Guy Dawnay, M.P.

Municipal Bui

Scale of 10 5 0 10



Ground-Floor-Plan

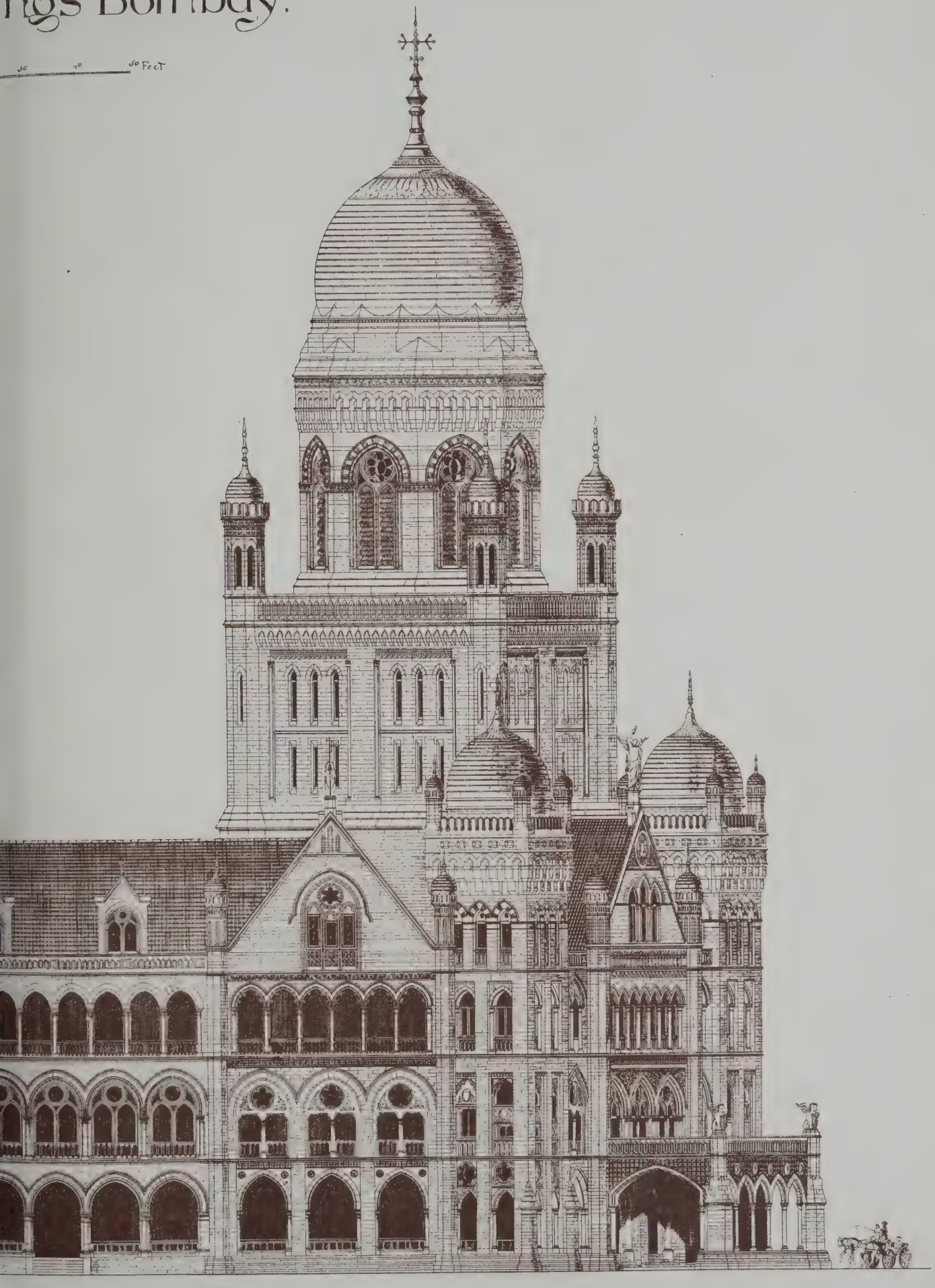


ELPHINSTONE CIRCLE

BOMBAY

ngs Bombay.

50 Feet

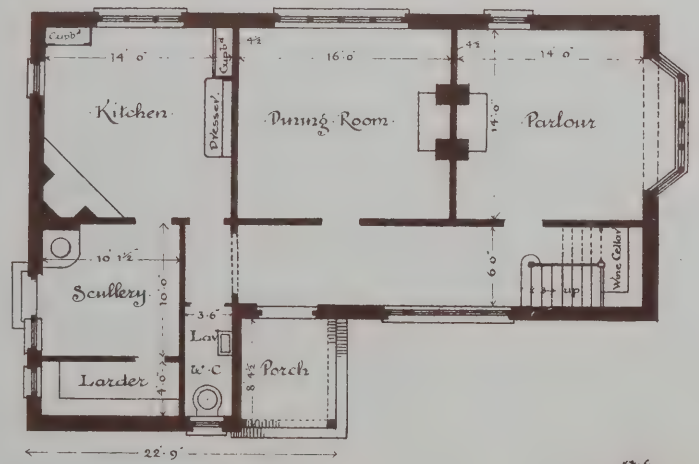


West Elevation
Facing
uikshank Road

F.R.I.B.A., A.M.I.C.E.

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

Cottage erected at Fleet Hants
for
A Boucher Esq



Ground Floor Plan

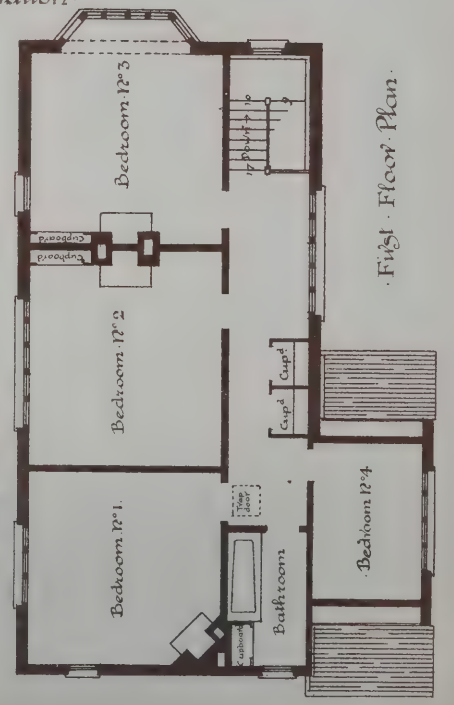


North Elevation



East Elevation





Stanley Colman Arch.
5 Lancaster Place
Strand W.C.


Lodge.
Buttresses added. Porch. & house restored.
North West



House at Haslemere.

Surrey.

for Ebenezer Shottermill Esq.

Edward Francis Clark
Archt.

Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C.

Municipal Buildings Bombay.

Scale of 10 5 0 10 20 30 40 50 Feet



Section on line A.B.

Richard Wm. Stevens
F.R.I.B.A., A.M.I.C.E.

Elphinstone Circle
Bombay.

Photo-Lithographed & Printed by James Akerman, 6, Queen Square

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LIX.—No. 1871.

FRIDAY, NOVEMBER 14, 1890.

ARCHITECTS AND CRAFTSMEN.

TWO notes have been struck which sound rather discordant: one is for a higher education for architects, the other for the revival of craftsmanship. Those who are advocating the training and education of architects—a systematic course of instruction like that in Germany, Austria, or America—appear to have overlooked the essentially practical and technical nature of those courses, and to have taken a standard of collegiate education that ought to have been commenced in the school. A higher education to be beneficial must come down to the level of the craftsman as well as rise to the more exalted duties of the artist. To make the two educations of the architect and craftsman more separable than they are, by placing the former above the head of the workman, is the real evil that we have to deplore. We cannot reassert too strongly, that the dissolution of the relation that once existed between the accessory arts and architecture proper has been the cause of the fatal schism. Directly architecture began to be practised by so-called "professional" men, the accessory arts of sculpture, painting, glass, wood, and metal working lost their former standing as arts, and have been practised apart from, and even in opposition to, the architect by tradesmen and specialists. Long after the dawn of the Renaissance, artists like Grinling Gibbons were encouraged by leading architects and worked hand in hand with them. There was a union of art and craftsmanship; the architect gave the general idea or a rough sketch of the proposed detail or ornamental carving, and the working artist developed and completed it. How is it now? The artist-designer and the craftsman are distinct persons; the one designs what is often not practicable, and the other executes, it may be a hundred miles away, at his own studio, a work that should be executed only on the building or within sight of it. All touch between the artist and executant, or the building and the actual work, is lost. The executed work, when it comes to be fixed—say the carving of a pinnacle of a tomb, or the boss and finial of a choir-stall—looks mannered and "shoppy"; there is no sympathy between the ornament and the adjacent features of the building; there is no scale or proportionate detail or vigour in the work, as there would have been if the detail had been executed *in situ*, or within sight and touch of the actual work.

In his address before the architectural section of the Art Congress at Birmingham, Mr. T. G. Jackson, M.A., spoke some timely words on the subject of artistic education. How to teach the public to appreciate good architecture, and to know it from bad when they see it, is, after all, more important than anything which architects can do amongst themselves to better their position in the eyes of the world. How to fit an architect to acquire the knowledge to enable him to associate with cultured gentlemen—to make him, in fact, an educated man before he can practise — is one thing and an important question; how to make him a good architect and to qualify him for his artistic avocation is another matter. With regard to the first sort of education, we ought to be able to assume, as Mr. Jackson hinted, that the student has had a suitable education for his position. Alas! it is true we cannot in every case; but, at least, it ought to be a condition taken for granted. The real education of the architect begins after the scholastic. Valuable as pupilage is in training the pupil for business and professional routine; useful as sketching, artistic freehand, and mechanical drawing are as means to the end, they are useless if not applied to actual building and to the crafts connected with it. He can only make these accomplishments useful by consulting the needs of the craftsman — by going into the workshop or the building and learning what is actually necessary, realising for himself the most economical modes of converting materials and rendering them effective. The instruction given by schools of design is useless unless it is accompanied by actual contact with materials and the treatment that can be produced by tools, for, as Mr. Jackson says, the knowledge of ancient styles only results in "mere antiquarianism," unless the conditions of modern requirements are consulted. An architect's work, says the same gentleman, "is the direction of a variety of handicrafts to none of which he has himself been trained." The more necessary that he should know "enough about them to be able in the first place to design his work so that it can be made coherent, and next so that it can be made without needless trouble and expense. This knowledge he can only acquire in the workshops and on the building; books will never teach it, and the student cannot begin too soon to frequent the masons' sheds and the carpenters' shops. I would have every young man, during his pupilage or at the end of it, pass a few months under a clerk of works at some building—best of all on one for which he has been making drawings in the office, so that he may see how his work on paper looks when realised in stone or wood. This is an education that never ends; as necessary for the architect as for the pupil, &c." We commend Mr. Jackson's remarks to the attention of the profession. No architect, he says, "who respects himself and pretends to the character of an artist, will now resign the decoration of his building to other hands."

It is this kinship of architecture and the allied arts that is the thesis of all recent utterances on art matters, the days of mere building, or "agency-architects," are numbered, and the one endeavour of all those of "light and leading" in the profession is to bring together the artists and handicraftsman—to unite the various vehicles of art expression, and harmonise them. The architect is the only one who can rally these forces, and can bring the discordant notes of modern crafts into concord. For this purpose he should be educated in the methods and technical processes of the arts. Sculpture and painting and decoration must no longer be taught exclusively in the school and museum or studio. They must be acquired in connection with the materials. Form and colour cannot be divorced, as they have been so long, from the vehicles by which they are expressed. Competition designs for plaques, tiles, mosaic, carving, glass, wall hangings, textile fabrics, and metal may do very well to instruct in the styles of art, and to teach the student freehand drawing; but they do not make artists in those materials; the proof of which proposition is found in the fact that the designs which are most workable are those of skilled craftsmen who have a practical knowledge of tools and the trades, but very seldom of students who study these things as mere art exercises on paper. The weak point in the system in vogue at South Kensington is that the department places a theory before the student, and examples, but does not go farther; and in this respect it is behind the French national schools of decorative art, which are intended not to form artists, but artisans, as shown by Mr. Rathbone at the Congress.

One of the obstacles that has now to be overcome in any attempt to bring the arts into kinship is the isolating tendency of competition—in other words, Specialism. This is another phase. Each separate branch of handicraft has crystallised round a few set forms, and it is very hard to get a specialist in art to think in any other way but his own. The architect finds it hard to get a workman to carry out a particular design that happens to be a little out of the common run, or that entails a little trouble and thought in its execution; while he is equally unable to direct the operative as to the most desirable way of proceeding. The one lacks the operative's technical skill; the other requires the wider training of art-knowledge and style. Here, again, the division between the artist and the craftsman is evident; the design is prepared by one man and the execution is intrusted to another. We cannot wonder that so many good designs are spoilt in execution. The workman, unable to understand the designer's ideas and not willing to give up the task, devises some scheme of his own to get over the difficulty; but not being trained as an artist, does something which spoils the whole character of the work. The architect, if he had been technically instructed, would have foreseen the difficulty, and have invented a more artistic method of doing it.

Mr. J. E. Hodgson, R.A., in his address at the Art Congress at Birmingham, alluded to the disastrous effect of specialism in art. We have to look these drawbacks in the face. Our sculpture and carving, metal and glass work, have to be executed in workshops miles away by art craftsmen that have been trained under the rules and standards fixed by South Kensington. The designers who are employed are artists, not artisans, hence there results an indirect mode of carrying out the architect's ideas. The original design goes to the special artist of the manufacturing firm, who makes a design in accordance with the traditions of his establishment; and then this design is placed into the hands of workmen who know nothing of art, who have not the slightest personal interest in the design, and who have never seen the building. What can we expect as the result of this mechanical routine?—for such it surely is, each step in the proceeding being as isolated and distinct as if the work was produced by going through two or three machines. The architect's sketch is the only one within touch of the actual building. It is first modified or completely recast by the specialist, who then has no further to do with it. Next it is handed to a third individual, who executes it in a mechanical way, and if any difficulty occurs he has to find out the solution as best he can.

It is hardly necessary to illustrate this circumlocution in various branches of artistic work. The question is, How can the art and the craftsmanship be brought into contact and harmony? The only remedy is to teach architects the methods and materials of working, and to instruct the operative in the principles of design. The intermediate art-designer has been in the way. Our method of teaching art, as Mr. Hodgson pointed out, is imperfect. Instead of a Government Department fixing standards of taste according to certain models, with the result that individuality is suppressed, and all thinking on the part of the operative discredited, the department should supply the means and the agencies for teaching the craftsman how to design, allowing each to compete for original designs. Now, every student, whether he comes from Bristol or Birmingham, Nottingham or Newcastle, as it has been observed, is obliged to work in the same groove, which prevents the development of local types and schools indigenous to the localities. Mr. Hodgson rightly contends for decentralisation in art, a system which has been found to give the highest results in France and other Continental countries. Mr. Rathbone said: "The French national schools

of decorative art are intended, not to form artists, but decorative artisans." This appears to be the right ideal. The principles underlying art in its varied application to materials are taught practically; freehand drawing and modelling, the use of tools, and the capabilities and adaptabilities of different materials are taught, and the pupils are lastly encouraged to design for themselves and to enter competitions for original designs. The two things that are now inimical to art production are the want of recognition by architects and artists of the artisan's methods and materials, and the specialism and isolation that has resulted. We look to the future education of the architect to remove these advantages.

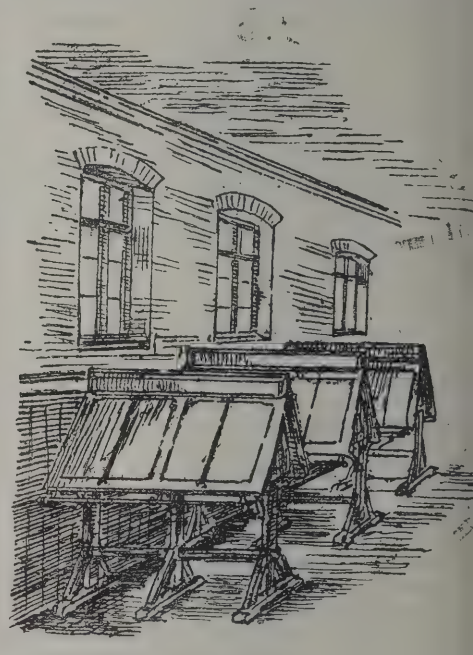
FREE PUBLIC LIBRARIES.—VII.

WE have briefly alluded to the systems used for heating public libraries. The hot-water system appears to be pretty general. Probably a combined system of warmed air and hot water will be found to be the most desirable and economical. The waiting-halls and borrowing lobbies should be kept to a comfortable degree of warmth, which they can be by the Grundy system, or one of the other improved methods, by introducing warmed air or by indirect radiation. Of course the architect must provide a basement for the heating apparatus, the delivery of the warm air from the hot-air chamber being by tubes opening on the level of the floor or in the skirting. If the warming is by hot water, the coils may be in chambers in the floor or otherwise by coil cases against the walls. The fresh air must be introduced from the outside to the chambers. It would be going beyond the object of these articles to discuss the details of any scheme for heating, as every case may be studied by itself. The many kinds of apparatus for heating, by convoluted and other forms of stoves in chambers in the basement, afford a good choice. Several modes of hot-water heating, though all based on the same principle, have been introduced, the chief difference being the form of radiator used. We cannot say that we admire the old box coils covered by cast-iron gratings or screens with tops—though they radiate a large amount of heat, and the tops can be made useful—for they become receptacles for dust and refuse. The same objection is found with regard to the grated chambers for pipes in the floor: they become filled with dust and refuse, though they are largely used in recently-built libraries. A neater and less objectionable form of hot-water radiator is now used, formed of vertical tubes and resembling steam radiators. These radiators consist of a series of upright wrought-iron tubes, with a top or entablature of cast-iron, the tubes being screwed into it. A similar cast-iron base or moulded plinth is also provided to receive the free ends of the tubes at the bottom. The water circulates from the base at one end through the pipes and top to the other end of base. Various forms of direct radiators are patented, all formed by upper and lower water-way connections. The horizontal radiators have the pipes horizontally placed, connected to vertical castings or waterways, and the pairs of pipes at one end form loops. These forms of radiator take up little room, and can be placed in recesses in the walls or between the bookcases. Of course, there should be means, by valves or otherwise, of regulating the heat. Its distribution in a news-room or reading-room is a matter that should have the first consideration. If warm air is admitted through a grating in the floor or in the wall, it ought to be near one of the doorways, so that the incoming air may be tempered. In the distribution of radiators the architect ought to consult the position of the bookcases, tables, and other furniture. Radiators or coils may be placed with convenience under the windows or in the recesses formed by bay windows, as at the Clapham Library. When the bookcases are arranged on the alcove system, already described, the hot-water radiators can be placed under the windows; their tops will then form useful shelves for the staff in assorting and looking over books.

For the floors of public libraries we think no kind is more suitable than wood-blocks. They are solid, there are no joints or crevices which get choked up with dust and dirt, and they are not so noisy as the ordinary hollow-boarded floor. Lowe's wood-block flooring has been laid down in several of the libraries recently built. At West Norwood the blocks are laid in herringbone fashion, the hot-water pipes being laid in channels covered by gratings in the floor. Both the news-room and newspaper-room are lighted by raised skylights in the central part of the roof, which is open-timbered, and with plaster panels, the only windows being at the end; each room is 40ft. by 23ft. A heating chamber is in the basement. Miss Durning Smith's Library in Lower Kennington-lane, designed by the same architect (Mr. S. R. J. Smith), is also heated by hot water, and has wood block-flooring. The book-case fittings are of sequoia wood. We mention these as small libraries, well adapted for the requirements of London suburbs.

Librarians of experience have much information which would be of value to architects. With respect to lighting—one of the weak points in many new libraries—they tell us that the windows are placed too low in the walls, instead of being high enough to prevent lounging near them, or to permit small wall bookcases to be placed beneath them. Top lighting has decided advantages—it obviates the disadvantage of reading with strong light in one's eyes. In the borrowers' lobbies many of the counters we have seen are in the dark, and it is difficult to read the indicators. They should be well lighted on both sides; but this is impossible as some of the lobbies are lighted—either there is an indirect borrowed light through glazed partitions, or the fanlight over the door is relied upon. Gas lighting has consequently to be used during the greater part of the day. Librarians are not agreed about the absolute need of ladies' and boys' reading-rooms; many of them say they are not necessary. The boys' reading-room, if required, should be under constant supervision next the lending library, and the ladies can be accommodated by special tables in the reading-room set apart for them. Experience also has shown that sanitary conveniences are likely to be abused in town libraries, and if they are provided, the automatic arrangement of locks opened by dropping a penny in a slot might be adopted with advantage.

The position of the windows in a reading-room or reference library is, as we have shown, a vital point in the planning of such a room, as upon it the arrangement of the bookshelves or cases will mainly depend. With side windows the alcove plan appears to be the one most desirable, as the light is admitted on both faces of the book cases, and the titles of the volumes can be read with greater distinctness. If the flat-wall or rack method is adopted, side-windows are objectionable, as they take up wall space unless they are placed high; also then the searcher or attendant has the light in his eyes, and the book backs are in shadow. In a narrow room arranged with alcoves or bays, the two sides of the cases at right angles to the wall might be shelved, the inner side left plain or panelled, so that the bookcase would be made deep enough for two rows of books back to back. The projection from the wall would be not more than 2 to 3ft. Between the bookcases and under the window shelves for large folios, or the radiators for heating, can be placed, whichever is the most necessary. At Wigan the reference library, which is a large and important one, has the alcove plan arranged in a structural manner. The bookcases which form the alcoves or bays continue up to the gallery floor on each side, forming deep recesses, and the ends of the cases are panelled as pilasters with brackets forming supports to the gallery. On the latter the same arrangement of bookcases, projecting at right angles to the walls, is noticed, between the ends of which and the gallery railing there is a passageway for the attendant. Our sketch shows a similar arrangement of



newspaper stands between the windows, allowing the light to fall on the newspapers, The other side of the room could be occupied by tables. A rather more economical plan for space is to have the half desk or stand with one slope placed flatway with the wall, as is done in several libraries, though this plan is only permissible when there is a top light or the windows are very high, otherwise the readers would have the light directly in front of them. Our readers will see, therefore, that the question of lighting by windows or skylights determines properly the mode of arranging the bookcases, the newspaper stands, and tables, and in their turn the arrangement of the furniture must become a factor in deciding upon the dimensions and proportion of the rooms. The two former principles ought necessarily to be the chief ones in settling upon the width of the room. Thus a top light enables any arrangement of cases and stands to be made; the stands with single slopes can be placed along the walls, and the centre of room occupied by the tables.

No less important than cases for books is the importance of keeping together in order, and out of dust and dirt, magazines, periodicals, valuable pamphlets, and paper-covered books. These cannot be placed on shelves. The "Marlborough Pamphlet cases" (Gould's patent), which are strongly and neatly made pasteboard cases, without springs or other corrodible metal contrivances which spoil the covers and pages, are well adapted for the purpose of preserving these often valuable forms of printed matter. A blank list for contents is attached to the inner sliding case, while the outer case has the appearance of a thick volume with lettered title, and can be placed upon the bookshelf. These cases are made of various sizes, and to take any of the journals and magazines. For unbound

literature and MSS. the Marlborough pamphlet case is a valuable addition to all the public libraries.

THE SOCIETY OF ARCHITECTS.

THE inaugural meeting of the seventh session of the Society of Architects was held on Tuesday evening at St. James's Hall, Piccadilly, the President, Mr. Robert Walker, A.M.Inst.C.E., of Cork, in the chair. The adoption of the report, of which we gave a summary in our issue of the 31st ult., p. 306, was moved by Mr. Alfred Howard, and seconded by Mr. D. Livingston, and agreed to, and the balance-sheet was also adopted on the motion of Messrs. E. J. Kibblewhite and T. R. Richards. The following gentlemen were elected as members:—Henry Bushell, P.A.S.I., 1, Finsbury-circus, E.C.; Richard James Jenkins, 56, Commercial-road, Portsmouth; Albert Frank Long, 1, Ash-walk, Warminster; and Charles Frederick Mitchell, the Polytechnic, 309, Regent-street, W.

The President then delivered

THE OPENING ADDRESS.

Having acknowledged his re-election to the chair, Mr. Walker congratulated the members on the fact that the annual report of the council showed an increase in numbers and an improved financial condition. In referring to the new galleries to be built from Mr. Christian's plans for the Tate Collection, he expressed a hope that the new building would be considerably larger than would be necessary to house that munificent gift to the nation, so as to provide for the reception of similar gifts in the future, and it should be so planned as to admit of extension from a central entrance. He would suggest that a section should be set apart for architectural drawings in the scheme for the new galleries. It might indeed be possible to found a school, or schools, of architecture in association with such a gallery. The President continued: As an introduction to our rules I find the following:—"The Society of Architects is an institution acting under the Literary and Scientific Institutions Act, 1854, 17 and 18 Vic., cap. 12, and is established for advancement of architectural art and practice." It appears to me that there is an obligation enjoined upon us by this prefix to our rules, which never ceases to demand honest and persistent efforts upon our parts to give effect to this object. How may this be done? We should commence with ourselves, and by constant attendance at the meetings help to render them more interesting and instructive, and qualify to take an intelligent and practical part in the work of advancement, by adding to our store of knowledge, and by improving those powers of mind and body which will make us more extensively useful to our fellows. The general question of the advancement of the profession is one that affects all practitioners, numbering, perhaps, five times the number outside of the professional bodies as are comprised within them; and the advancement of the whole and the finding of remedies for undoubted evils can only be brought about by a fixing of a minimum standard of general and technical educational attainments for aspirants to the ranks of the profession. I venture to say that this can only be done by passing an Education and Registration Act duly considered and safeguarded in the interests of the public and the profession, and which should recognise vested interests. For the following reasons, among many which may be adduced:—Firstly, it would at once provide the funds necessary to pay for teaching and examining bodies, the absence of which paralyses the action of voluntary bodies, no matter how earnest and praiseworthy the efforts of such bodies may be, by charging a moderate fee to the parties primarily interested—namely, the practitioners and the students. Secondly, in all forward movements for the quickening and revival of existing institutions, and for the advancement of the best interests of the community at large or any of its sections, it is acknowledged that the young present the best and most fruitful field for laying down the seed of permanent advancement and progress, and afford the most certain promise of a growing and abundant harvest of results. Applying this view to our profession, it would appear that education and examination form the only reliable bases to start from for the attainment of the advancement which is desired. Thirdly, the Bill before Parliament recognises vested interests and it safeguards the public, while it may be modified in details as may be considered wise in Committee. Further, the measure does not disturb any of the recognised bodies, whether they exist with or without charters. Their powers will not be impaired. The Act will only deal with their members by way of recognition, and not with the bodies, as such, by way of abrogating their functions, or curtailing their powers of expansion; on the contrary, it is a result looked forward to with great confidence, that all existing bodies throughout the kingdoms will be greatly increased in membership and efficiency. We held this view three or four years ago, and the interest awakened by merely promulgating the Bill has verified the accuracy of the prediction, as the professional returns will show. This question does not belong to any society or body, and perhaps you will bear with me while I say to my professional brethren outside our society, whom I have no right to address as I address you, that I am deeply anxious to discover how the members of the profession throughout the kingdoms, who hitherto have remained indifferent to this matter, may be induced to study this question so as to realise its importance, and see that it is their own question, interesting, not merely to a few, but of the first importance to the whole body of practitioners inside and outside of the institutions and societies. It has been made abundantly clear that advancement is needed, and that many evils exist which need removal. I do not remember that any body has controverted this statement. On the contrary, it has been acknowledged on all hands. I feel, however, that it would be well that the Registration Committee, to whom we can only make the suggestion, should collect what has been written on both sides of this question, eliminating irrelevant matter, and reissue it, in the hope that it may reach the apathetic and indifferent, and induce them to give the measure due consideration, and finally their support. Those who oppose the Education and Registration Bill do so chiefly on three grounds, so far as I am acquainted with their expressed views, and, to avoid being misunderstood, I desire to say that the concluding sentences of the last paragraph do not apply to them. I shall refer briefly to the three objections:—Firstly, it is objected that "the Bill registers unqualified men"! It registers all men who prove that they are in practice, because it would be unjust to do otherwise, and because Parliament will respect the vested interests of even incompetent men who have been endowed by the public with a practice; but, from the passing of the Bill, the element of incompetency will become a diminishing quantity, until it finally disappears from our ranks, when the public will be placed in such a position of security as may be obtained by the assurance that all practitioners are at least possessed of the minimum standard education and training necessary for the due discharge of the functions of an architect. In your published lectures and proceedings this objection has been fully and completely disposed of. Secondly, it is said that the Bill is unnecessary, because the chief, or oldest, architectural body has provided a voluntary examination for those desiring to enter its ranks as associates. This shows that the second class of objectors have failed to grasp the magnitude and scope of the question dealt with in the Bill, and do not appear to bear in mind that examination only bears the same relation to education that a thermometer does to temperature—namely, to record results for which it is in no way responsible. The thermometer performs a valuable function when testing temperatures that require to be changed for scientific and manufacturing purposes, and ascertaining and recording the progress of the changes until the necessary degree of heat or cold is reached, but it is no part of the effective force which produces the required results. Education and technical training are the effective forces necessary to be put in motion in this matter, and then fittingly steps in test examination to measure and record the results, and to repeat the tests until efficiency is discovered to exist, or the standard reached. It appears, therefore, to be placed beyond dispute that teaching and examining bodies should co-exist, or be allied and affiliated so as to produce reliable results, and it is not reasonable to expect any very marked evidences of advancement until they do co-exist, and in sufficient numbers to be commensurate with the extent of the work to be done. The voluntary examinations referred to should be availed of to the fullest extent, which has not been the case, although since the Registration Bill has been promulgated, considerably larger numbers have applied; but that is relatively to the numbers who presented themselves in former years, while, as compared with the thousands who comprise the army of practitioners throughout the kindoms, the number is small. The masses of professional aspirants cannot be reached until education and examination are co-existent and compulsory under a legally constituted and recognised authority, and it will perhaps be conceded that it will be impossible to teach and examine all from one centre. Supreme control may be in one centre, but the work should be distributed by means of sub-centres or branches established under prescribed conditions, and with due care in selecting localities. The absence of chairs of architecture in our colleges is a negative proof of the neglect on the part of those who may have been in a position to advance the interests of the profession in this respect, and did not do so. In every college in the kingdom the medical students have the advantage of seven professors' chairs, one for each of the sections into which their studies are divided; and owing, I understand, chiefly to the efforts of the Institution of Civil Engineers, there are spread amongst the colleges and universities 20 chairs of engineering, while there are only two chairs of architecture. I trust that this state of things may be speedily remedied. The third reason which has been given as an objection to passing the Bill is that of the time not being considered opportune. This is the language of procrastination. One may read between the lines, "Almost thou persuadest me to" support the Bill, and perhaps it may be intended that we should so read. What a host of sincerest flatterers King Agrippa has had all down through the ages which intervene between his time and ours! With what eagerness men have recourse to the putting off to a more convenient season all difficult, unpleasant, or embarrassing questions which beset the march of progress! It is the besetting sin of men who have opportunities, and lack the courage of their convictions to use them. The fruit of this weakness has ever been delay, not growth. In conclusion, the foundation of an architect's education should be laid in early youth, and all his studies should point to his ultimate occupation even before he enters upon his college or pupilage course. Technical knowledge is more conveniently acquired in early life, and an effort should therefore be made at that period to impart it. All education up to the end of pupilage is but learning the use of the tools with which the architect works during his practice. The power of architectural bodies to promote advancement is retarded owing to the want of funds, and the necessity for providing teaching which does not properly come within the scope of their corporate work. The Education Bill provides the effective force—funds, which, under proper authority and control in its administration, would do the work that voluntary bodies are unable to accomplish.

A hearty vote of thanks was accorded to the President for his address, on the motion of Mr. G. S. Bridgman, of Torquay, vice-president, seconded by Mr. T. Claxton Fidler, M.Inst.C.E., a visitor; and supported by Messrs. W. H. Seth-Smith, ex-president; S. G. Goss, and Ellis Marsland.

THE ART CONGRESS AT BIRMINGHAM.

WE resume from last week, p. 643, our report of the proceedings at this successful congress. The presidential address to the Section of Applied Art was delivered by Mr. A. H. Mackmurdo on Thursday, his topic being

MODERN CONDITIONS AS AFFECTING ARTISTIC PRODUCTION.

They were in Birmingham at this time expending a far larger sum than was absolutely necessary in providing Assize Courts, so as to obtain for the building the qualities of dignity, majesty, importance, and charm. The immediate and practical purpose might have been served as well by an ample, square, securely-built, and well-roofed block, with holes to get in at, and holes to look out of; it might have been done by just builder's work. Why, then, this expenditure for mere sentiment? Was it not because they felt that in this building was reflected the collective life of the community? Whether conscious of it or not, this was the meaning of their thought when they chose to sacrifice bread

for art, and demanded a building such as might embody and shadow forth these sentiments or instincts. "For the stone shall cry out of the wall, and the beam out of the timber shall answer it," not against them, but for them. As their outward life was, so their public works would be. If mean, ungenerous, sordid, factious, without large intention, without social feeling, so their buildings would inevitably be. If, on the other hand, municipal life were generous, orderly, compact, masculine, pioneered by a bold spirit towards large and unselfish issues, then for all time the world would know it by the buildings the future would inherit of their hands. The unsatisfactory nature of so-called artistic work, the poverty of it, the utter want of decorative quality in it, were due to the hurried spasmodic demand for its creation and completion. Were it not for this haste, we should have hundreds of artists engaged in giving a decorative quality to the commonplace, every-day furniture of life. But artists, instead of doing this, were painting very inferior pictures, and they would not turn their hands to this unless we demanded the same individuality of work in a piece of pottery, iron-work, jewellery, or stained glass as we demanded in the oil-painting we hung on our walls. To create the decorative quality, the artist, after submitting to the limitations of his material, must be left with a free hand. This, however, the manufacturer could not do, unless he had artists intimately associated with the workshop, living in the atmosphere of industry, as was the case in France and Belgium. To better artistic industry, he advised as a practical step that those who directed industrial workshops should confer at times with such a body as the Art-Workers' Guild.

ART IN JEWELLERY AND PERSONAL ORNAMENTS.

Mr. J. W. Tonks, in a paper on "Art as Applied to Jewellery and Personal Ornaments," said that there were two points to be decided by the artist previous to his giving consistent counsel to the modern jeweller. Firstly, what rules of construction should we adopt in a jewel—the Classic rule or the Mediæval? Was ornament to be regarded as an object to serve any use, or as a mere decoration which might be arranged according to any art fancy? Must the piece have a visible constructive outline, which should hold the parts together, or might it consist of a series of independent scrolls, soldered together wherever they happened to touch? Secondly, what was the true theory of colour in a jewel? Was a personal ornament to contain one leading colour only, with the idea that the dress of the wearer should be expected to harmonise with it; or might a jewel contain any number of colours in gems or enamel, or both, so that it should be expected to harmonise only with itself when examined separately? There had as yet been no articulate utterance of the artistic world upon these two vital problems. The Scandinavian, Frank, and Goth united with Etruscan and Greek, decided that the first object of an ornament should be the use it was intended to serve. With this object there were always well-defined lines of construction having due relation to the object of the piece, and the decoration was carefully subordinated to that end. When they got to the later filigree work of India, when they were past the early and palmy days of the Italian Renaissance, all this was changed. With regard to the colours of a jewel, nothing was more fascinating to an artist who had a special ornament to produce, than to feel that he could harmonise it in colours without regard to any ulterior consideration. An eminent firm in London, some twenty years ago, commissioned gifted artists to prepare designs after the style of the Mediæval jewellery, in which the theory of several colours in one jewel was sustained. The pieces were executed with care and judgment, but it afforded a significant moral, when, six years afterwards, in the window of a London pawnbroker, one of these art pieces was offered at a price little above the precious metal it contained.

AN ARTISTIC PROTEST AGAINST MODERN ADVERTISING.

Mr. J. Brett, A.R.A., moved the following resolution:—"That this Congress deplores the disorderly and reckless method of the present system of advertising, and, in view of the universal disfigurement of our towns occasioned thereby, considers that the whole subject needs the serious attention of the public." Mr. Stirling Lee seconded the motion, which was carried nanimously.

A GALLERY OF BRITISH ART.

At the afternoon sitting of the other sections Mr. J. Orrock, R.I., read a paper in advocacy of the establishment of a National Gallery of British Art. Mr. Orrock said the representation of the English School of Painting in our National Gallery had almost become a necessity, for the people were determined that this country of literature, science, and advanced civilisation should have her art fairly represented and judged on its merits. Englishmen have not only always had a strong artistic feeling, but have actually produced a great school of painting, as well as masters in many other departments of fine art. Even now, in spite of the continuous drain for foreign museums and private collections, we had still in this country more magnificent pictures by the great masters than were in all other countries on earth. This could be proved by the seemingly exhaustless mine of art from which the exhibitions of Old Masters at Burlington House had been annually supplied. Our taste for art led us to buy Cuyp, Hobbema, Ruysdael, and other celebrities of the Flemish and Dutch schools, when the works of those masters were neglected in their native country. The prices of our own art were rising every day, and in a few years it would be a serious thing to pay for our own masters' works, whereas a few years ago a "gallery" of them could have been bought for the price now paid for a Reynolds or a Romney. The poor Cinderella of English art, the water-colour art, had many masters, and although foreigners had been ever slow to give us our due as oil painters, they had always freely granted us the only place for our water-colours. The best landscape painters in water-colours had also been the best painters in oil; but Turner was greatest in water-colours, and Cotman, Cox, De Wint, Barrett, Holland, and others who were cried down as oil painters, took the first position now in that medium. In the National Gallery there were no pictures by those masters. Mr. Orrock went on to sketch the history of the agitation for a thorough representation of British art in the National Gallery, its relinquishment on the ground that there was no room, and also the over-ruling of the project of Sir Charles Robinson for the formation of a gallery of British art at Kensington Palace in favour of utilising the 1871 galleries at South Kensington. If £100,000 were spent on extending the National Gallery, the missing links in our British Art, in every department, could easily be supplied, and at a comparatively small cost, and he believed and knew that wealthy donors would come forward and help to fill up the vacancies. He had persistently felt that the National Gallery was the proper place for the great national exhibition of British art, and failing that, the Government ought to collect all the English pictures belonging to the nation, be they at South Kensington or elsewhere.

In the evening Mr. Starkie Gardner delivered an address to artisans at the Midland Institute on "Metal Work."

THE EDUCATION OF SCULPTORS.

On Friday Mr. E. Onslow Ford, A.R.A., read a paper on this subject. The time was more than ripe for efforts to be made to establish a really national school of sculpture in every important town in the country. Such a school should include masonry, stone-carving in all branches, designing and modelling, and every minor trade that was in any way connected with the art, so that work could be undertaken from beginning to end. The mastership of such a school should be obtained and held by election, and the reward would be the recompense obtained by way of private patronage.

THE RELATIONS OF SCULPTURE AND ARCHITECTURE.

Mr. B. Creswick (modelling master of the Birmingham Municipal School of Art), in a paper on this question, said we had numerous fine buildings, yet it was sad to see what little educational value or influence their sculpture exercised over the minds of the people, and how little it had done to add to the dignity and importance of our architecture. Scarcely did we find any indication of real thoughtful design in its application to the buildings upon which it was employed. Very much skilful labour was now done, full of rule and proportion; but, however admirable these qualities might be in themselves, they were not all that was to be desired. The educational value of sculpture that would place before the people nature in all its various phases—human, animal, and floral—was not taken into account by architects, sculptors, and others. It was impossible to over-estimate the effect of a systematic application of sculpture to our architecture, dealing with subjects that would make the people familar with all the events of English history. Such a system would form a powerful aid to the work of our art galleries, museums, and schools of art. —Considerable discussion followed.—Mr. T. G. Jackson illustrated how sculpture nowadays had to be done per contract, as with bricklaying and plumbing. He could not agree with the suggestion that boards should have the control of designs, for the probability was that a design having been submitted to so many gentlemen, with so many ideas, would have nothing original left in it.—Mr. Hugh Stannus congratulated Birmingham that its municipality had taken her School of Art under its wing, instead of leaving it under the domination of South Kensington.—Mr. E. R. Taylor thought that the reason people on entering the art galleries and museums rushed to the pictures was that in them some story was told which appealed to their feelings. The attention of the public could also be awakened by storiation in sculpture.

TECHNICAL EDUCATION AS APPLIED TO ART.

Alderman Kenrick, M.P., in a paper on this subject, pointed out the progress made in the last few years in Birmingham, the cause of which improvement he ascribed to (1) the establishment of a municipal art gallery and museum of art, thrown open to the public; and (2) the transfer of the School of Art to the City Council. Mr. C. R. Ashbee followed with a paper satirising the present rage for big polytechnic schemes, and suggested that the man of wealth, instead of giving £10,000 to one of those "booms," would do better to devote the interest of the money in the technical training of his workpeople on his own premises. A long discussion followed, in which Messrs. Hugh Stannus, Baldwin Brown, T. Ablett, Whitworth Wallis, and others took part. A resolution was passed advocating the Sunday opening of museums.

ARCHITECTURE AND EDUCATION.

A paper on this subject by Mr. Aston Webb was read in his absence, he being confined to bed by illness. He discussed at length the various agencies now in operation for the education of architects, and pleaded for the adoption of a co-ordinated scheme. He found no difficulty in picturing to himself a time, and that not so very far distant, when there should be one systematic method of architectural education throughout the United Kingdom, with the Royal Academy at its head; when architectural students, stimulated by a recognised examination in addition to the love of their art, would attend, as a matter of course, the art schools in their town and the lectures of the local architectural association, where they would go through a regular course to prepare them for the Institute examination; when one or two of the best students from each town would be annually drafted up to the Academy schools (greatly enlarged) for a final course, and a participation in the great struggle for the Academy Travelling Studentship, which would then take its place side by side with the French Prix de Rome; when Academy students would have free and systematic access to all lectures workshops, &c., throughout London, and also a free intercourse with the students in painting and sculpture, and, through the workshops of the technical institutes and other means, will meet the carver, the modeller, the smith, the lead-worker, the decorator, and glass-painter; then a would dawn on the architect of the future that these men should be admitted to a share in the design of the accessories of his building; and he would gather about him a band of men educated with him from his youth, and bound to him by ties somewhat similar to those of the public schools and universities of to-day, and would work out a building with them in all its completeness; and so would cease endeavouring to design every detail himself, or strive to make his building entirely different to any other that had previously been erected; and by degrees men might find themselves again on the architectural rails working on one line of metals and developing an architectural style.

STAINED GLASS.

In the evening Mr. Henry Holiday delivered a lecture to artisans on "Stained Glass." Cour

cillor Hardman presided over a large audience. Mr. Holiday described the processes used in the manufacture of stained glass, and the different kinds of material used. He then dealt with various schools of design and style, and pointed out that almost as much depended upon the position of the window in the building of which it formed a part as upon the material and style of the window itself.

On Saturday the Congress concluded its sittings. Mr. W. B. Richmond, A.R.A., addressing the Section of Painting, said a commercial feeling had crept over the art of painting and checked its development. In regard to street advertising, he regretted that artists did not try to foster the growth of a better class of posters, the public taste having been degraded. He suggested the appointment of a street inspector, and a tax on hoardings. A resolution was adopted in favour of regulating the education in each school of art in accordance with local industry.

ROBERT BOYLE AND SON, LIMITED.

THE directors of Robert Boyle and Son, Limited, ventilating engineers, London and Glasgow, have resolved to recommend a dividend of 12½ per cent., free of Income-tax, on the ordinary and deferred shares of the Company for the year ending September last, placing to the reserve fund one-sixth of the profits earned, and carrying forward to next year a balance of £1,299.

The year ended has been the most prosperous since the formation of the Company. The directors attribute this success, and their consequent ability to pay such a handsome dividend, to their constant study of the requirements of architects, and to the great and ever-increasing demand for the latest improved form of the self-acting air-pump ventilator, patented in 1882 and perfected in 1887, which, though much superior in design, make, and action, is now sold at 50 per cent. less than previous and inferior forms, constituting it not only the most efficient and ornamental, but the cheapest in the market. The Company have at present some very important contracts in hand and in prospect at home and abroad. Mr. Robert Boyle recently visited Egypt, India, China, and Japan, and has surveyed and furnished plans and estimates for the ventilation of the Khedive's Palace, Cairo; the drainage of Bombay; French Cathedral, Canton; Summer Palace of the Emperor of China, Pekin; new Houses of Parliament, Japan; Imperial University of Japan; also a scheme for the improved sanitation of Pekin.

NOTES ON BUILDING PRICES.—XII.

By JOHN LEANING.

ROADS.

THE building surveyor is but rarely required to estimate the value of roads, the drives on private property being generally made by the gardeners; he should, however, possess a general knowledge of their value. When the builder does the work it is usually of a simple character, consisting of comparatively shallow digging forming the contour of the roadway, a layer of rough and another layer of finer material, and possibly rolling. It is unnecessary to enlarge upon the totally different character of such roads as these to the streets and roads of a large city, where constant traffic and heavy loads require unusual precautions and large expense. Much valuable information as to cost of roads and streets is to be found in Boulnois, "Municipal and Sanitary Engineer's Handbook" (1883); Law and Clark, "The Construction of Roads and Streets" (1887); the *Minutes of Proceedings* of the Institution of Civil Engineers; Delano, "On the Use of Asphalte and Mineral Bitumen," Vol. LX. (1880); Deacon, "Street Carriageway Pavements," Vol. LVIII. (1879); Howarth, "Wood as a Paving Material under Heavy Traffic," Vol. LVIII. (1879); Stayton, "Wood Pavement in the Metropolis," Vol. LXXVIII. (1884); *Transactions* of the Surveyors' Institution; Burrows, "The Construction and Maintenance of Country Roads," Vol. XVI. (1884); Hewitt, "The Maintenance of Macadamised Roads," Vol. XXI. (1888); Denton, "Farm Roads on Strong Soils"; *Journal* of Royal Agricultural Society, Vol. XVIII. (1857); Codrington, "Maintenance of Macadamised Roads;" the Reports to the Streets Committee of the City of London, by Mr. Haywood; the recently-published book, "Pavements and Roads," reprinted from the *Building and Engineering Record* (New York). It will be seen from the data furnished in the books above mentioned that maintenance is an important element of the cost. The builder's maintenance would terminate at the same time as that of the building—six months from completion. The paving of gateways or yards of manufactories with granite setts, wood blocks, or asphalte is the nearest approach to the conditions of street-paving that the estimator has ordinarily to deal with. The value of much of the following information lies in the variety of detail and methods of calculation adopted to arrive at the cost price; the specific prices will, of course, be modified by local considerations.

EXTRACT FROM MR. STAYTON'S TABLE OF COST OF VARIOUS KINDS OF WOOD PAVING IN LONDON.

When laid.	Situation.	System.	Cost per sq. yard.	Years of maintenance included in first charge.	Remarks.
			s. d.		
1873	Ludgate-hill	Improved.	18 0	1	
1874	Aldersgate-street	,,	15 0	2	Exclusive of concrete foundation.
1876	Northumberland-avenue	,,	15 0	—	
1876	Leadenhall-street	,,	12 3	2	
1880	Parliament-street	,,	13 8	—	
1876	Oxford-street	Asphaltic.	15 6	—	
1877	Strand	,,	13 6	—	
1877	Fleet-street	,,	15 0	—	
1878	Brompton-road	,,	13 9	—	
1879	High Holborn	,,	15 4	—	
1880	Regent-street	,,	12 6	—	
1875	Oxford-street	Henson's.	16 6	—	
1875	Ditto	,,	16 6	—	On 2in. extra concrete.
1876	Leadenhall-street	,,	18 6	2	
1876	Oxford-street	,,	14 0	—	Ditto.
1877	Fleet-street	,,	16 0	—	
1878	Brompton-road	,,	12 9	3	
1880	Euston-road	,,	11 6	3	
1879	Pall Mall	Lloyd's keyed.	8 5	—	On existing concrete.
1880	Regent-street	,,	13 9	—	
1875	Coleman-street	Ligno-mineral.	13 6	—	
1874	Cannon-street	Carey.	13 6	2	
1877	High-street, Kensington	Plain.	14 0	3	
1878	Fulham-road	,,	14 0	—	
1878	High-street, Notting Hill	,,	12 6	3	
1878	Oxford-street	,,	8 4½	—	On existing concrete.
1880	Edgware-road	,,	8 4½	—	Ditto.
1879	Sloane-street	,,	10 6	—	
1879	King's-road	,,	10 6	—	
1879	Ditto	Pitch pine.	11 8	—	
1879	Ditto	Creosoted blocks and mastic joint.	14 2	—	
1879	Ditto	Ditto and lime joint.	11 10	—	
1879	Ditto	Asphalte bed.	12 4	—	
1879	Praed-street	Plain.	10 7	—	

Some Notes of Cost.—The weakness of tabulated particulars in existing books is the absence in most instances of complete information of the mode of their production—whether the men were employed piece-work or day-work, or the work done by a contractor or not, as under the last conditions the prices would include profit, and could not reasonably be compared with the results of labour employed directly by a local authority. Ellice Clark's table, frequently quoted, states comparative *cost* of carriage-ways as follows (1880):—

	Original cost per sq. yd. s.	d.
Wood pavement	15	1·5
Val de Travers' compressed asphalte	18	0·0
Granite sets 7in. by 3in. laid over a layer of 12in. of cement concrete	17	9·0
Macadam in South of England	4	9·0

Wooden Carriage way Pavings.—The wooden carriage-way paving of London and most other towns is almost universally done by companies, and it is very questionable whether any local authority can do the work at as low a price. The united profits on the materials bought separately are sure to exceed those of a contractor who supplies the whole; nor does a local board possess the appliances for either kind of paving which so largely contribute to successful results. To this rule perhaps the parish of Chelsea, and some other metropolitan parishes, are exceptions, as the prices quoted by Mr. Stayton are lower than the average of the well-known tabulated lists, but the latter include profit. Careful descriptions of the pavings in the following tables are to be found in Mr. Haywood's reports, Stayton on Wood Pavement, Clark and Law, and Boulnois, before referred to.

Mr. Stayton says (1884):—"The variations in the prices paid for wood pavement in various parts of the Metropolis has been somewhat remarkable, the maximum cost per square yard for laying a pavement of concrete foundation with entirely new materials having amounted to 18s. 6d., and the minimum to 10s. 6d.; owing presumably to competition and to the experience which has been gained, together with increased facilities, the cost has been gradually reduced to reasonable limits as compared with the charges made eight or nine years since."

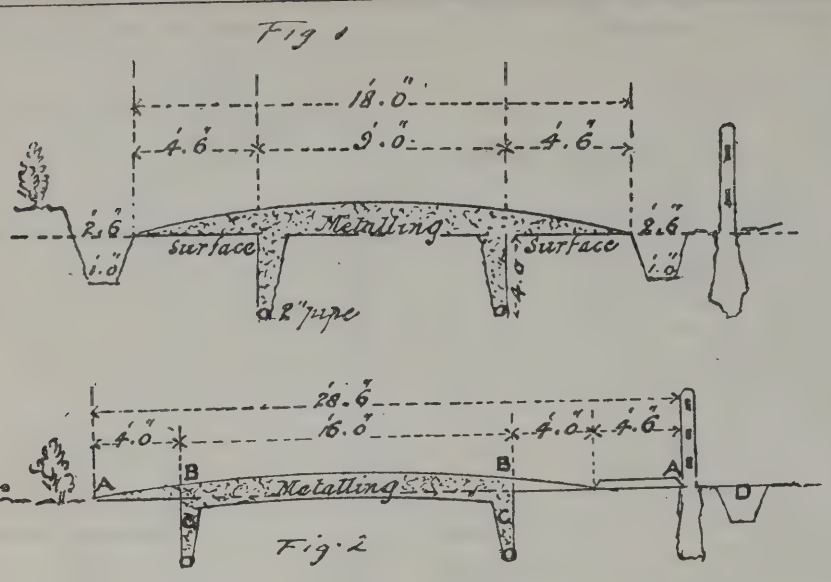
The details of the cost per square yard of the plain wood-block paving in Chelsea are as follows:—

Item.	31,333 yds. in Sloane-street and King's-road in 1879.		10,573 yds. in Fulham-road in 1881.
Labour in breaking up macadam surface, and excavating	11·00d.	....	11·00
Cartage of old materials, including shoot for rubbish	9·04	....	9·80
Portland cement for concrete and grout	20·02	....	17·17
Thames ballast and sand for concrete grout and top dressing	8·56	....	5·80
Blocks	58·66	....	60·82
Studs	1·58	....	1·48
Labour in bottoming up and levelling, preparing and laying concrete, fixing studs in, wheeling and laying blocks, grouting, top-dressing, watching, and sundries	13·45	....	14·12
Labour and materials in permanently fitting margins	0·86	....	0·90
Sundries, plants, tools, superintendence, testing, cement, oil, repairs, &c.	2·92	....	1·85
	126·09	....	122·94

Labour and materials, grouting, cost 5d. per square yard; thin coating of small stones and spreading after grouting, cost, labour and materials, 2d. per square yard.

This pavement was of red deal blocks, 3in. by 9in. by 6in., with ⅜in. joints, filled with cement grout; three cast-iron studs in the side of each block, laid on concrete 6in. thick, 1 of cement to 5½ of ballast, i.e., 33c.ft. of ballast to 6·4c.ft. (five bushels) of cement.

This may be compared with Mr. Deacon



statement (1879) as to cost of wood pavement in Liverpool:—

Cost of Wood Pavements per Superficial Yard.

	s.	d.
"Improved" wood pavement, 1877, Great Howard-street	16	0
Improved wood pavement, Bold-street	15	3
Henson's wood pavement, Church-street, including bituminous concrete foundation, 3½in. deep	15	10

With Liverpool prices at the present time the actual cost per square yard of wood pavement, with blocks 6in. deep, and bituminous concrete foundations, would be as follows:—

	s.	d.
Bituminous concrete	2	0
Creosoted Baltic pine blocks, pitch grouting, and gravel, including labour	12	0
	14	0
Add for establishment charges 8 per cent.	1	1½
	15	1½

The cost per square yard of bituminous concrete foundation in Liverpool, 6in. deep, is as follows (the bitumen as described for jointing of sets):—

	s.	d.
0·153 ton broken stones, including cartage 6s.	0	11
0·041 ton pitch, 30s.	1	3
1·2 gallon oil, 2½d.	0	3
0·007 ton coke, 12s.	0	1
Labour	0	9
	3	3
Add for establishment expenses 8 per cent.	0	3
	3	6

Wood Blocks.—9in. by 3in. by 6in. red deal blocks, the commonest size, delivered in London cost £6 10s. per 1,000. Assuming the joints to be ½in. wide, we have 39 per superficial yard = 5s. 1d. nearly = 4¼d. per foot for 3in. deal. 5in. deep would involve a slightly larger proportion of sawing, but so small that paving of that depth might be valued in the same ratio.

Howarth says (1879):—

	Per super. yard. s.	d.
Red deal blocks, 6in. deep, cost	5	6
Felt for tight joint	0	6
Portland cement concrete, one of cement to six ballast	2	6
Labour, watching, lighting, and all extras, and dressing with fine grit and tar	3	0
Total	11	6

The Improved Wood-Paviug Company lay their paving in London complete, without foundation, at 7s. 6d. per super. yard; the blocks, 9in. by 6in. by 3in., of red deal, creosoted, jointed with bitumen, and top-dressed with fine sand.

Carriage-Way Paving of Granite Setts or Pitchers.—In the tabulated lists prepared by Mr. Haywood of the cost of granite paving in the City, the rates are all exclusive of foundation. The list was given as follows, in his report of 1871:—

Estimated cost of granite pavements:—

Situation.	Description.	First cost per sq. yd. complete.
Various...	Aberdeen granite 3 by 9.	16s. 0d.
	(No foundation included in the above).	

Experimental paving in Moorgate-street, 1848-56:—

Name of Granite.	Dimensions of setts. Depth.	Width at surface.	Length at surface.	First cost per sq. yd. complete.
Blue Aberdeen	9	4	8 to 12	13s. 8d.
Mount Sorrel	9	4	8 to 12	14s. 9d.
Blue Aberdeen	9	3	8 to 12	16s. 3d.
Mount Sorrel	9	3	8 to 12	17s. 0d.
Blue Aberdeen	5	3	5	10s. 9d.
Mount Sorrel	5	3	5	12s. 0d.

No foundation included in above, but laid and grouted with lime and sand.

The following table is from Mr. Deacon's paper before referred to:—Cost per sq. yd. (in Liverpool) of paving of Penmaenmawr or similar stone, in sets 5in. to 7in. long, under 3in. wide, and 7½in. deep, laid with asphalte joints, the joints partially filled with dry, clean gravel, and finished with coal-tar pitch, and oil from distillation of coal tar, known in the trade as creosote oil, exclusive of foundation and excavation.

	s.	d.
0·31 ton stone setts 7½in. deep, including cartage, at 28s.	8	8
0·064 ton gravel for bedding, ¾in. thick, 6s. 6d.	0	5
0·015 ton pitch, 30s.	0	5·25
0·6 gallon oil, 2½d.	0	1·5
0·002 ton coke, 12s.	0	0·25
0·018 ton shingle, dried and riddled, 7s.	0	1·5
Labour	0	8·5
	10	6
Add establishment expenses 8 per cent.	0	10
Total	11	4
Similar pavement with setts 6½in. deep, per square yard	10	4

Similar pavement, but with ordinary gravel joints:—

	s.	d.
0·31 ton stone setts 7½in. deep, including cartage, 28s.	8	8
0·096 ton gravel, for bedding, 1in. thick, 6s. 6d.	0	7·5
0·02 ton gravel, for joints, 6s.	0	1·5
	9	10
Add establishment expenses 8 per cent.	0	9
Total	10	7
Similar pavement with setts 6½in. deep, per square yard	9	6

In London and some of the large provincial towns the paving contractors will redress the granite setts taken up from the streets, and contract to relay them as paving of stables and in similar positions. Some London prices are as follows:—

Second-hand granite pitching, the stones about 5in. wide, 6in. deep, laid and grouted with lime grout, exclusive of digging or sand for bedding	7s. 0d.
Do. the stones about 3in. by 4in.	7s. 6d.

The increased use of asphalte and wood, and the habit of vestries of redressing and relaying granite paving in thoroughfares with less traffic than the main streets, often makes it difficult to obtain old stone.

Macadamised Roads.—The variety of methods of making these roads is productive of a great variety of prices, and the quotation of the cost of a particular road is of very little use to the estimator, unless accompanied by a careful description of such road and the cost of labour and materials.

Law and Clark say:—"An ordinary Macadamised road, constructed in the best manner, with metal (granite) laid 9in. deep, costs, at London prices, 6s. 3d. per square yard" (1877).

Burrows says (1884):—It may be stated generally that good farm roads, well stoned, can seldom be made for less than 1s. 6d. per superficial yard, and good gravel roads 2s. 6d." This appears to be based upon experiences in the county of Kent.

Mr. Grantham says (1884), referring to cost of roads on building estates, a road in districts on the south side of London would cost, for formation, metalling, sewer, surface-water pipes, and fencing, 4s. 6d. to 5s. a square yard, including sometimes the removal of a large quantity of earth. North of London it would cost more, from 5s. to 7s. per square yard, the whole width being 40ft., including the footpaths in the superficial measure. He thought £6 per chain the lowest figure for a solid and substantial road 10ft. wide, of the farm-road type.

Mr. Bailey Denton, in illustration of his remarks on farm roads (1857), using a sketch of uniform section as given, arrives at prices per chain varying from £2 12s. 5d. to £6 4s. 1½d., and makes his calculation as follows:—

	£	s.	d.
Digging side ditches 18in. deep, 30in. at top, 12in. at bottom, say 13c.yds. per chain, at 3d. per yd.	0	3	3
Digging and filling under-drains 4ft. deep, 8 rods per chain at 6½d. per rod	0	4	4
Pipes for same, 135 per chain, at 20s. per 1,000	0	2	9
Laying and treading in	0	0	6
Forming base for metalling, shifting earth, levelling and finishing side spaces, seeding same, &c.	0	3	9
	0	14	7
Add for proportion of culverts and contingencies, 10 per cent.	0	1	5
Total cost of formation per chain	0	16	0

Farm road of sifted gravel on a foundation of unsifted gravel, charging nothing for the gravel in the bed:—

	£	s.	d.
Formation as detailed	0	16	0
Foundation or lower stratum of unsifted gravel, 4½in. deep, 8¼ cubic yards, at 5½d. per cubic yard, digging and clamping	0	3	9
Filling at 1½d. per yard	0	1	0
Carting an average lead of 1½ miles at 10d. per yard per mile	0	10	4
Spreading at 1d. per yard	0	0	8½
Covering or upper stratum of sifted gravel, 4½in. deep, 8¼ yards, at 10½d. per yard	0	7	2½
Filling, carting, and spreading, as above	0	12	0½
Finishing, &c., at 2d. per yard, of covering	0	1	4
Total cost per chain	2	12	5

A sensible method of valuation of country roads is as follows, from Mr. Burrows' paper, before referred to (Fig. 2):—

A A, width of formation; B B, metalled road way; C C, under-drainage; D, side ditch.

Cost of new road per chain in a level country as sketch:—

FORMATION.

	£	s.	d.	£	s.	d.
Digging ditch on one side, D, 2ft. 6in. over, 2ft. 6in. deep, 12in. at bottom, at 1s. per rod	0	4	0			
Digging two drains, C C, 4ft. deep, laying pipes, and refilling, at 7d. per rod—8 rods	0	4	8			
140 drain pipes at 24s. per thousand, and cartage at 4s. 8d. per thousand	0	4	0½			
Formation of bed and sides	0	6	0			
	0	18	8½			
Add 12 per cent. for culverts, &c.	0	2	2			
				1	0	1

FENCING.

Corrimony wire fence on each side = 44 yards at 7d. per yard	1	5	8			
Proportion for straining pillars 1 in every 250 yards at 32s. 6d. each	0	5	8			
				1	11	

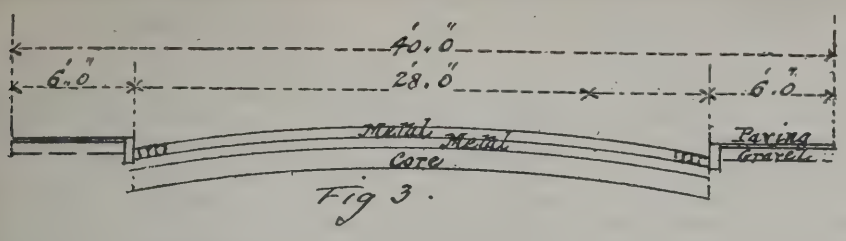


Fig 3.

METALLING.

			£ s. d.
16ft. wide laid on 16in. thick in layers of 7in., 5in., and 4in. before rolling = 52½ cubic yards of stone per chain. Cost for digging, breaking, cartage, and spreading = 3s. 52½ cubic yards at 3s.			7 16 6
Footpath 4ft. wide metalled 6in. thick will require 4⅘ cubic yards per chain at 3s. per yard		0 14 8	
Formation at 2s. per chain		0 2 0	
			0 16 8
Total cost per chain			11 5 4½

Heart of oak fencing in same locality costs as follows, for material and labour, each length :—

	s. d.
One post	2 3
Three rails	3 9
Mortising post and ending rails	0 7
Erecting each length	0 8
Cost per length	7 3

	£ s. d.
Each side 7⅓ lengths per chain = 14⅔ lengths at 7s. 3d.	5 6 4
The cost of quicksets, preparing ground, and planting at 6s. 1d. per chain = for two sides	0 12 2

An illustration of a common type of road on suburban building estates presenting some points of difference to Mr. Burrows' example, and valued more in accordance with the proposed method of these papers, is probably all that the estimator will find necessary. Valuation of road and footways, say 100ft. long, as Fig. 3.

				£ s. d.
100 0			148yds. Dig	
40 0			and cart at 3s.	
Average depth 1 0	4,000 0		per yd. cube	22 4 0
100 0			44yds. Labour	
40 0	400 0		forming surface at ¼d.	
			per yd. sup.	0 2 9
100 0			104yds. Hard	
28 0			core, and	
1 0	2,800 0		levelling and rolling at 2s. 6d. per yd. cube	13 0 0

Much of this may be obtained for nothing by giving contractor permission to shoot.

			£ s. d.
100 0		311yds. Layer of Thames	
28 0	2,800 0	ballast, 6in. thick, and levelling and rolling at 10d. per yd. sup.	12 19 2
100 0		311yds. Layer of Guernsey granite 6in. thick in	
28 0	2,800 0	2½in. cubes, and levelling and rolling at 3s. per yard sup.	46 13 0
2 100 0	200 0	12in. by 6in. Guernsey granite curb in 3ft. lengths, drafted 1in. wide on 2 upper angles, hammer-dressed on top, and 6in. down each vertical face, securely bedded in sharp sand, at 2s. per foot run	20 0 0
100 0		311yds. Layer of clean,	
28 0	2,800 0	sharp sand 2in. thick (3½d.) water (½d.) and roll (¼d.) at 4¼d. per yd. sup.	5 10 2
2 100 0		133yds. Layer of rough	
6 0	1,200 0	gravel 6in. thick, and roll at 1s. per yd. sup.	6 13 0
2 100 0		133yds. Tar paving 2½in.	
6 0	1,200 0	thick, at 2s. 3d. per yd. sup.	14 19 3
2 100 0		33yds. Paving of 6in. by	
1 6	300 0	3in. Guernsey granite setts as gutter, and grouting with Portland cement and sharp sand one and one, at 10s. 9d. per yd. sup.	17 14 9
			159 16 1

The gullies used are of various character. The distance apart being settled, they would be valued as directed in the section on Drainage.

The price per yard super. for either road or footpaths may easily be deduced from the foregoing particulars by collecting the items of either category, and dividing by the superficial quantity.

THE SEPULCHRAL MONUMENTS OF ESSEX.*

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

MR FREDERIC CHANCELLOR, F.R.I.B.A., has just published a record of the more interesting tombs in Essex churches, and accompanying the copious drawings, with which his folio is illustrated, will be found a comprehensive account of the families and persons connected with these county memorials. There are about two hundred illustrations, and over four hundred pages of letterpress. By the courtesy of Mr. Chancellor we are enabled to present our readers with two specimen plates. The subject is the celebrated canopied tomb (see BUILDING NEWS, April 2nd, 1886) of Henry, the first Lord Marney, who died in 1523. It is constructed of terracotta in a quasi-Italian manner, with much beauty and delicacy of detail, similar in parts, though perhaps hardly so refined, as the work shown by the tombs in Oxburgh Church, Norfolk, and Wymondham Church in the same county. Dallaway, in his notes to Walpole, suggests that the design of Layer Marney Towers was due to Girolamo da Trevize, the King's architect. This Mr. Chancellor does not refer to, but suggests that Sutton Place, near Guildford, built by Sir Richard Weston in 1525, is another example of this kind of building in which terracotta is largely employed.

The canopy of the tomb we illustrate now is located under the arch between the chancel and the Marney chapel or aisle. The recumbent effigy is of black marble, resting on a slab of the same material. The whole of this work is in excellent preservation; but the monumental pediments above the cornice on the north side are partly missing, and are here restored by Mr. John S. Corder, who made this drawing. The head of Lord Marney, which is uncovered, with the hair cut square across the forehead and descending over the ears, rests on a lozenge-shaped pillow placed upon an oblong cushion. The hands are bare, and have rings on. The body armour is hidden by the tabard; but the two tuilles, with their attachment to the taces defending the outer front of the thighs, are shown. The arms are encased in brassarts and vambraces, the elbows guarded by condières, which are developed so as to protect the bend of the arm. Cuissarts and jambarts, with genouillières similar in pattern to the elbow-pieces, encase the lower limbs, and the Garter of St. George is worn on the left leg. The feet are covered with sabbatons of five pieces, broad at the toes and armed with rowelled spurs resting on a lion. A dagger hangs on the right hip. The Garter, as worn on the leg, and as inclosing the armorials on the sides of the tomb, is treated in a manner unusual in English heraldry. The design of this tomb is so rich and unique that Mr. Chancellor has done good service in securing such careful details of it to a good scale. The canopy shows some signs of dropping, but seems to be supported upon a frame of ironwork, which through rust is now becoming unequal to the strain. The terracotta is a pleasing buff in colour, with tinges of red in parts. There is an earlier tomb in this church to Sir William Marney, with an effigy clothed in a hauberk of mail, the head resting on a large helm. The third tomb is that of John Lord Marney, second and last Baron of this family. His tomb is in the same style as that now illustrated, but it has no canopy, though at the west end are the remains of an altar which was ordered in his will to be placed in this position.

Among the other memorials Mr. Chancellor has illustrated, we find those of the De Veres, the Bourchiers, the Petres, the Maynards, the Pointz family, and the Darcys, all of whom, with their several branches and dependencies, played of course an important part in the ancient government and social associations of this part of England, dating in some cases from the Conquest. Our space will not allow us to gather more from Mr. Chancellor's wealth of material. If anything, the book is too bulky for easy reference, and as the subjects are grouped according to the families whose tombs are represented, they are not readily classified or compared. The plates vary much in merit necessarily, but as a work of record the book will have lasting value.

* The Ancient Sepulchral Monuments of Essex. By FREDERIC CHANCELLOR, Architect, Chelmsford. Edmund Durrant and Co., 1890.

AN EXHIBITION IN BLACK AND WHITE.

GLANCING through the more notable drawings at Mr. Mendoza's rooms, we come upon "Jezebel" surrounded by the dogs who devoured the woman. The Egyptian, temple-like buildings in the background hardly suggest an upper window from whence the "king's daughter" was thrown, and the steps on which her body lies indicate another departure from the text in Mr. Arthur Wardle's study. Mr. John Varley contributes three or four street scenes in Alexandria and Cairo, executed in oils, which well merit praise. The mosques, with their minarets, are brightly shown in greys and blacks, with plenty of pure whites. "The White Mill at Rye" is a somewhat hard but effective water-colour monograph in sepia, by Mr. Archibald Webb, showing the old mill by the dyke or stream running up from what remains of the ancient harbour. "Somebody's Sweetheart," by Miss F. Bramley Warren, is a study of a head rather well done. The best work of this kind, however, is Mr. James Hayllar's "Head of a boy" (No. 162), a brush drawing in sepia. The "Head Master's House and Part of Western's Yard, Eton College," by Mr. Philip Norman, has an old-world air about it which accords with the brick gables and ancient trees. The niggling, dotted pen-and-ink drawing of the great entrance to the Ashmolean Museum, Oxford, by Mr. Claude de Neuville, shows the old crumbling brickwork well enough, but the figures are bad. The view of Santa Maria della Salute, Venice is beautifully drawn, looking at the church over the water from below the fork, by Mr. H. Pilleau, R.I., in Indian ink. Mr. George C. Haité, in his pencil sketch, "A Tregetto, Venice," represents the domes of this same church in outlines which are too stilted. His drawing, however, is undoubtedly masterly in breadth and touch, as well as brilliant. The same remark is applicable to his view of "Tintoretto's House, Venice" (No. 146). Miss Sophia Beale shows us Dresden from over the bridge in pen-and-ink (No. 107), and Mr. J. Shaw Crompton draws with a masterly touch in his violet ink brush study of "Fellaheen Leaving Cairo." Mr. Wm. Gale, in red chalks, exhibits "Magnificat Anima Mea," a simple, good, lifelike female form of delicate features standing within a doorway somewhat decorative in feeling, and quite refined. Mr. Richard S. James's nude study, "After the Bath," hanging near, is a well-modelled girl modestly shown. Eton College again figures in part by Mr. Philip Norman in a photo-like sepia sketch from the Slough-road (No. 163), and Miss Marian Logsdail paints in oils a grey and black cold study of an uninteresting doorway, "Over-canopied with Clustering Leaves." The last sheet of sketches we have space to notice is one of St. John's Hospital, Canterbury, by Mr. Holland Tringham, who imitates with skill the American methods of draughtsmanship—eminently picturesque and bright with colour.

Messrs. Mellowes and Co., of Sheffield, have obtained a three years' contract from H.M. War Office for supplying and fixing their "Eclipse" imperishable glazing (tin-lead and steel bars) at the Royal Arsenal, Woolwich, also at the dockyards and other Government establishments.

A monument in granite and marble has just been erected over the family grave in Highgate Cemetery to the memory of the late Edward Lloyd (*Lloyd's Weekly News*, &c). The work has been executed by Mr. C. H. Mabey, sculptor, Westminster.

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CONTEMPORARY BRITISH ARCHITECTS.—"ASHENDENE," BAYFORD, HERTS.—THE MARNEY MONUMENTS IN LAYER MARNEY CHURCH, ESSEX.—COTTAGE AT HIGHAM.—ST. JUDE'S CHURCH, HALIFAX.—SKETCHES AT THE ARTS AND CRAFTS EXHIBITION.—SWINSTY OLD HALL, NEAR OTLEY, YORKS.

Our Illustrations.

CONTEMPORARY BRITISH ARCHITECTS.

(See description on p. 700.)

"ASHENDENE."

"Ashendene," of which we give a view of part of the garden front, has lately been built for Mr. James W. Carlile, J.P., by Messrs. Holland and Hannen, from the designs and under the direction of Mr. Joseph H. Wallis, of The Willows, Chiswick Mall, W. The house, with stabling, gardener's cottage, and lodge, is built of red brick, roofed and weather-tiled with Broseley tiles, and cost £12,000. It is situated about four miles from Hertford. The drawing was exhibited at this year's Royal Academy.

THE SEPULCHRAL MONUMENTS OF ESSEX.

(See description on p. 679.)

COTTAGE AT HIGHAM.

This cottage has been erected on a private estate at Higham, near Colchester, with the immediate object of providing a house for the head gardener, but has been so arranged and located as to be suitable for occupation independently of the estate if so required. The walls up to first floor are hollow and faced with local red bricks. Above they are hung with weather-tiling nailed into the joints. The front and back gables are constructed of timber-work filled in with plastering faced with rough-cast. The roofs are covered with old plain tiles from a building formerly existing on the site. The cost of the building was something under the contract price of £365. The original drawings, by the architect, Mr. W. H. Atkin Berry, A.R.I.B.A., were in the Royal Academy Exhibition this year.

ST. JUDE'S CHURCH, HALIFAX.

The principal feature of St. Jude's, Halifax, lies in the tower, which is 21ft. square, and is placed on the south side of the aisle. The plan of the church is a parallelogram, with nave and aisles 72ft. long and 22ft. and 11ft. wide respectively; the chancel is 36ft. by 20ft. 6in., with vestries on the north and an organ-chamber on the south sides, separated from the chancel and aisles by deeply-moulded traceried screens. Owing to the exposed situation of the site more consideration is given to building with thick walls and in a solid manner than to ornamentation. The work is being carried out from the drawings, and under the superintendence, of Mr. W. Swinden Barber, of Halifax. The drawing herewith given was shown at the Royal Academy this year.

FURNITURE AT THE ARTS AND CRAFTS EXHIBITION.

The fireplace (No. 150) is by Messrs. Wilson and Pomeroy. The figures, especially the central one of the water-sylph "Undine," are good, while the foliage is easy and graceful. Emanating from the Guild and School of Handicraft is the oak presidential chair (No. 190), commendably free from the over-elaboration which such articles generally receive. The Band of Ornament is decidedly the best feature in the sideboard (No. 238), designed by Mr. Chas. Spooner. The wood-work, which is of English-grown sycamore, is left in its natural state, and would soon become disfigured by dirt. Mr. Lethaby's design for a walnut cabinet (No. 316) has been well executed, the workmanship, both in the inlay and the fitting of its parts, being first-class. The oak secretaire, another product of the Guild and School of Handicraft, is a serviceable piece of furniture; the back legs are left square, and look a trifle heavy; the cornice and four small panels are decorated with gesso and colour; the upper part is divided into pigeon holes, accentuated by the panels of the doors, the lower portion having a full front.

SWINSTY OLD HALL.

Swinsty Hall is beatifully situated in one of the valleys branching off from Wharfedale. The house stands on what is now the margin of one of the three large reservoirs (supplying Leeds) which have been formed by the damming up across the valley of the River Washburn, and is sheltered by the moors forming the gathering grounds of the water supply. The house dates from 1537, and is built of dressed local stone. The windows were originally filled with leaded lights in various patterns, now superseded in some cases by casements and plain squares. I am sorry to say that no information could be gleaned as to historical or other interesting facts connected with the house or family that built it. Close by, but now in the bed of the reservoir, was the site of the house in which Sir Thomas Fairfax was born and lived. Unfortunately, it was found necessary to demolish this interesting relic of the Civil War, along with many others, when the reservoirs were made. Many inhabitants of the surrounding district can still remember it, and pointed the site out to us where it used to stand on a little knoll overhanging the bed of the river. Swinsty Hall is at present in the occupation of Mr. J. Bramley, and my friend and I are greatly indebted to him for his kindness in allowing us the free run of the house, although at that time we were entire strangers to him. There is some nice oak-work inside; but we were obliged to leave it for want of time, among this oak-work being a carved overmantel in the oak room, and some antique chairs and tables.—W. W. Smith.

CHIPS.

The Prince and Princess of Wales were present at the reopening services at Sandringham Church on Sunday. The restoration and enlargement of the church have been carried out from the designs and under the direction of Sir Arthur W. Blomfield, A.R.A., and in the chancel is a medallion portrait of the late Emperor Frederick of Germany, executed by Sir Edgar Boehm, R.A.

The foundation-stone of the principal station of the electric-lighting works now being carried out by the St. Pancras Vestry was laid in Stanhope-street, Euston-road, on Wednesday week. The works will be constructed at a cost of £70,000, from plans by Professor Henry Robinson, M.Inst.C.E., electrical engineer to the vestry, and the prices charged to the public are promised to be about half those of private companies.

It was reported to the Montgomeryshire County Council on Saturday that nine candidates had been chosen by the committee of selection to come before the council for the office of county surveyor, rendered vacant by the dismissal of Mr. Swettenham. Mr. G. A. Hutchins, county surveyor of Cardiganshire, was elected. The salary is £400 a year, to include all expenses.

A window in the south aisle of Holy Trinity Church, Watermoor, Cirencester, has been filled with stained glass as a memorial. The subject is "Christ raising the daughter of Jairus," and the artists were Messrs. Hardman, of Birmingham. A lofty cover of wrought brass, the work of Messrs. J. W. Singer and Sons, of Frome, has also been added to the font of the same church.

At a public meeting held in the Public Hall, Preston, on Saturday, a resolution moved by the mayor was carried, to the effect that, in view of the importance of good plumbing in sanitary work, every possible step ought to be taken to promote the registration of plumbers.

COMPETITIONS.

Oldham.—A special meeting of the Oldham School Board was held on Saturday last, to decide upon the plans for Coppice School. The assessor, Mr. W. Landless, architect to the Leeds School Board, who was appointed to adjudicate upon the plans, was present. It was stated that thirty-eight designs had been sent in, four of them being from local architects. The whole of the designs had been carefully examined by the assessor, who had selected seven for the special consideration of the board. These were gone through one by one, after which it was decided to award the premiums as follows:—First premium of £50 to the author of the design numbered 1: Mr. G. E. T. Lawrence, Albert-buildings, 49, Queen Victoria-street, London. Second premium of £15, to the authors of the design numbered 33: Messrs. Phillips and Holdgate, Newport and Cardiff. Third premium of £10 to the authors of the design numbered 15: Messrs. Winder and Taylor, Priory Chambers, Oldham. The designs are on view in Messrs. Scott Bros., rooms, Ashcroft-street, and will be open to the inspection of the public for a few days.

ARCHÆOLOGICAL.

Fairstead, Essex.—The restoration of the parish church at Fairstead has led to several interesting discoveries. On the removal of the plaster from the walls the original mural paintings and decorations were brought to light. On the south wall were traces of a large painting, part of a scroll, four "dedication crosses," and a female head, all in dark Indian red. Remains of a scroll in blue were found on the north wall, and also three "dedication crosses" in red. In two places the plaster has been left—one at the south-east corner, having on it a "bidding prayer" for King James I., the other at the north-east corner, where there is a text in Old English characters and spelling. Over the chancel arch have been discovered five paintings illustrating (1) our Lord's triumphal entry into Jerusalem; (2) the Last Supper; (3) scene in Gethsemane of Judas kissing our Lord; (4) Christ being crowned with thorns; (5) incidents in the "Way of Sorrows."

The tender of Messrs. J. Harley and Son, of Smethwick (£9,350), has been accepted for the erection of schools at Greet for the Yardley School Board, in accordance with plans and quantities by Mr. Arthur Harrison, Queen Chambers, Colmore-row, Birmingham.

Good progress seems to have been made with the preliminary works on the Nicaragua Canal. According to an official report, the company expended during last year over three million dollars, and now has under the concession ten years in which to construct the canal. The work completed stands as follows:—Greytown Pier has been extended 700ft., and where there was dry land last May there is now 10ft. of water. The canal route has been cleared from Greytown to the divide cut. Ten miles of railway have been already completed, and a trestle bridge across the harbour is nearly finished. The right of way between the lake and the Pacific has been bought, and the clearing of the route there has been begun. The employés number 1,500.

At a meeting held at Wymondbury, Cheshire, on Friday, to consider whether the parish church should be restored or entirely rebuilt, it was decided by a large majority to rebuild it with the exception of the tower. The present edifice was erected in 1834; but the tower dates back to the 13th century, and possesses some fine architectural features and a good basis. The foundations of the church, however, show every indication of giving way, and altogether its condition is very unsafe. In a circular issued by the vicar, the cost of restoring the building was estimated at £8,000, while a new church would need an expenditure of £6,500 only.

A new Mission chapel at Murchington, near Throwleigh, on Exmoor, will be consecrated on the 25th inst. It is built of local granite, and consists of nave and chancel; the former is 30ft. 6in. by 20ft., the latter is 13ft. 9in. by 20ft. The exterior has snail-creep pointing, and the roof is covered with Broomhall tiles, by the Broomhall Tile Company, of London. The nave is floored with wood, and the chancel with encaustic tiles. All the roof timbers are open and unvarnished; the principals are of hammer-beam construction, and carved angels mark the division between choir and sanctuary, into which the chancel is divided. The windows are all of Early Decorated character, and executed in Stretten oak. The work has cost £400. Messrs. Aggett and Underhill, of Chagford were the builders.

WAYSIDE NOTES.

THAT the Society of Architects is a progressive body, without the sluggishness of corporations more advanced in years, must have been a fact patent to many on Tuesday evening last when the President, Mr. Robert Walker, of Cork, delivered his address inaugurating the new session. Times past have witnessed thin gatherings indeed in the Society's room in the St. James's Hall. Tuesday's meeting was, I believe, unprecedentedly well attended. A more tangible proof of the real life in this the youngest of the metropolitan architectural communities would be difficult to find. It waxes stronger session by session. Men of mark in the profession are joining from all quarters, and providing the Society continues in the way in which its career has begun, its lasting prosperity is now assured.

Mr. Walker's address was all I had anticipated, and from first to last was listened to with the greatest interest by an appreciative audience. Sterling advice to professional men, young and old, cautions to students, new light on the (by some) much-vexed Registration question, deeper advocacy of the demands of education—these and other subjects of every importance to architects formed the framework of a discourse so clearly and tersely and deliberately enunciated that the mere verbal delivery was a source of delight to listeners. Mr. Walker evidently learned long years ago the value of a faculty for forensic speaking, and attaches so much importance to a command of speech in professional life, that he made special and particular reference to the subject in the early portion of Tuesday's address. I would that this were duly noticed by the whole profession. We all know how sadly elementary elocution is neglected, not only by ourselves, but by English men and women generally. To all it is a matter to be regretted; to ourselves more to be regretted still. The power of speaking as a gentleman should is of inestimable value to men engaged in the duties of an architect's calling. Everyone possessing the power to speak clearly and tersely is not only himself the possessor of a gift, but a tower of strength in our midst, in that he maintains—as only the accomplished speaker can maintain—the respect and reverence of the public. Mr. Walker expressed a wish that more and new, and ever new, members of the Society of Architects should take part in the various discussions on papers read, &c., and I would add that this spirit should appear at the Institute and at the Association, that so the younger members of the profession may learn and acquire the faculty of speech, and be none the less put on their guard against that acme of bad taste—an affectation of oratorical delivery.

Anti-Registrationists might take note of the further remarks Mr. Walker has added to the literature of the Registration question. They may be regarded as an earnest of the fact that the council of the Society are not going to lose enthusiasm for one moment on this subject.

Of much interest, especially to those to whom the information is novel, are the parts of Mr. Walker's address touching the sadly small number of Chairs of Architecture at the present time established. Contrasted with the honour gained by the engineering and other professions, our own loss is especially marked. I take this evil to be referable to the one grand cause of ill and misfortune that betide architects—and that is the disbanded, unfederated, unregistered, and wholly unsympathetic (in heart) state in which, in this year of grace, we find ourselves. We have no grand bond of sympathy—no *union*—no *strength*. How, therefore, can we influence the foundation of observances and institutions that may reflect credit upon the profession? Where is the power, the strength of purpose? We do not even so order ourselves that our material well-being may be at its greatest, and can expect, accordingly, little to be done that will advance the honour of Architecture and those who practise it, as an art or science, as the case may be.

After Mr. Walker's address, and after the commentators had one and all impressed us with the—one would think—*self-evident* fact that the Society of Architects had been now fairly weaned, cut its teeth, and gone into frocks in lieu of long clothes, we adjourned, as is the wont, to the Council Chamber, and over the refreshments thoughtfully provided by the Council on such occasions, some talk turned on the patenting of plans, wherefrom I should deduce the supposition that Messrs. Flockton and Gibbs have made themselves pre-eminently unpopular. How much good they will do themselves remains to be seen. The Patent Office, we know, takes, and patents anything; but the validity of a patent is not one and the same thing with the taking out of the patent. Your own leader in last week's issue has been read, I believe, very generally and with great interest, all that is said being admirable. You have considered the matter in a clear, unbiased, impartial manner, such as it is difficult for an architect to do. He, naturally enough, has regard to the intention of Messrs. Flockton and Gibbs chiefly in the light of an attempt to prevent his employment of plans based on a certain principle. The marked animosity, therefore, to the attempt to patent, and to establish—for this is what it amounts to—an entirely new source of trouble to the profession, evidenced in all directions, is easily to be understood. No one, I may say, has any belief in the future validity of a claim of this nature. Possibly, also, Messrs. Flockton and Gibbs are themselves, at heart, as hard of faith. It may be that the advertisement and notoriety accruing from the publicity given to this case will pay them for the trouble taken. This is an uncertainty. Here, however, is a certainty: it never pays anyone, in the long run, to so act as to create unfavourable impressions in the minds of their professional brethren. I have some hope that Messrs. Flockton and Gibbs may abandon their attempt at "patent architecture," and am certain that did they know the widespread feeling in this matter, they would at once generously throw everything over. Should they continue to carry forward their proposals, then, remembering the degradation to architecture as an art, the impediment to it as a science, the certain hampering of the designers' hands, and the rapidity and certainty with which unscrupulous—on a point of loyalty to the profession to which they belong—persons will follow up with a whole galaxy of patented plans; then I confidently assert, it will be the common duty, for the common weal, to take such steps to oppose the sealing of the patent as will nip this kind of adventure in the bud.

The National Art Congress of this year has not been so successful as in years past. Such, at least, is the impression made upon me. I have seen few references or reports in the public Press, and what I have seen have not always been favourable. Nevertheless, some excellent papers have been read at Birmingham, notably those by architects. Mr. T. Graham Jackson has ever something to say worth listening to and pondering over, and if we cannot all agree on the subject of examination, we can yet accord to this admirable architect, who is an artist without being a mere "artist-architect," a full and overflowing measure of praise for unswerving persistency in his own good work, and for the calm serenity with which he preserves the even tenor of his way amid evanescent storms of fashion. Mr. Jackson continues to advocate the necessity for a bond of sympathy between architect and craftsman, and a brighter day may dawn yet in this respect. This, however, will not be brought about by mere evenings at the Arts and Crafts, after the manner of Tuesday; though, for aught I know, this visit of the members of the Institute may be a seed-sowing productive, in due season, of good fruit. Sympathy between architect and the craftsman may be compared with that between architect and builder. Some men hold the sympathies of others; and there are individuals with less lively souls who never had, and never seem capable of, sympathy. How do builders speak of architects? Of some as ravening wolves; of others as bearing, "without abuse, the grand old name of gentleman." There are great—in popular and in professional esteem—architects who have passed away, of whom builders speak hardly. Such men look upon the builder as a machine, on which the less thought and care wasted the better for the building, which may be said to have been brought into existence by main force, coldly beautiful as it may be. What bond of sympathy had such architects with the craftsmen? It would be no difficult task to point out the subtle differences between work so executed and that where the architect has been in sympathetic touch with builder and workmen, and where there has been humane sympathy for the difficulties and trials of others. The differences might be slight—mere trifles to the uneducated eye; nevertheless, out of trifles come perfection.

GOTH.

BUILDERS' BENEVOLENT INSTITUTION ANNUAL DINNER.

THE forty-third anniversary dinner in aid of the funds of this institution was held on Thursday evening, the 6th inst., at Carpenters' Hall, London Wall. Mr. Wm. Shepherd, the President, occupied the chair, and in proposing the toast of the evening, "Success to the Builders' Benevolent Institution," said it was 43 years ago since several gentlemen interested in the matter met and laid the foundations of this deserving charity. It was the bounden duty of the successors of those founders to hand it down unimpaired, and to maintain its efficiency. The tree had borne considerable fruit already, for no less than 120 male and 68 female pensioners had enjoyed the benefits of the institution. At the issue of the last annual report there were 25 men and 39 women on the roll of the charity. Those who had conducted the institution had from time to time more ambitious views than they had been able to give effect to, such as the establishment of almshouses; but such schemes had been put aside for want of the necessary funds. To pay the present pensioners about £2,000 was needed yearly, besides the necessary expenses for conducting the charity. The object of the institution was to help those who had been unsuccessful in business, and it was an astonishing thing that so many connected with the building trade took so little interest in this society. The trade was one surrounded with great vicissitudes—in fact, there was hardly another business attended with so many conflicting elements. It was, therefore, of the utmost importance that the members of the industry in the Metropolis who had been compelled to give up the struggle, through no fault of their own, should have some other resource than being declared paupers, and being associated for the remainder of their lives with persons who had never tried to make headway. It was strange that those who had always been removed farthest from such a contingency had been the greatest supporters of the institution. At the same time, he was sorry to say that a large number of firms and individuals connected with the trade, and who were doing a lucrative business in the Metropolis, had never contributed a shilling to the funds of the charity. In this institution the dangers of indiscriminate almsgiving were reduced to a minimum, as every case was personally investigated by the committee. The chairman concluded with an eloquent appeal for aid to the funds, and coupled the toast with the name of Mr. Geo. Plucknett, J.P., the treasurer. The toast having been duly honoured,

Mr. Plucknett replied on behalf of the institution, which he believed was doing its duty according to the intentions and objects of the subscribers. The great drawback was the want of sufficient money to provide for all those who sought its benefits. It was a remarkable fact that in the area which the charity covered there were something like 5,000 builders, besides thousands of others engaged in trades connected with building; yet out of all this number only 500 subscribed to the institution. At the same time, the committee were grateful to the consistent subscribers, and to the present President for his anxiety to help the charity.

Mr. J. W. Duffield gave "The Worshipful Company of Carpenters." The institution was much indebted to the Carpenters' Company for the use of their noble hall and for their substantial donations to the funds.

Mr. B. J. Jacob (Warden of the Company) replied. Carpenters and builders were so closely allied that if one trade suffered, so did the other, and as long as he had a voice in the matter he would do all that he could to aid the institution.

The remaining toasts were "The Chairman and President," "The Architects and Surveyors," and "The Vice-Presidents, Committee, and Stewards."

In the course of the evening subscriptions to the amount of £827 were announced, of which £615 appeared in the President's list.

Messrs. Baldry and Yerburgh, the contractors for the new reservoir for the Swansea Waterworks, have claimed £34,000 from the Swansea Corporation for "extras." This sum is equal to a 3s. rate.

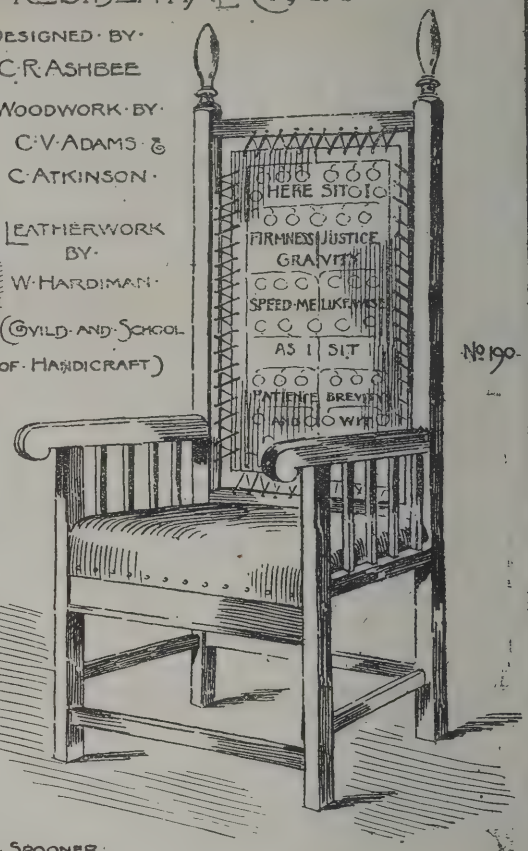
PRESIDENTIAL CHAIR

DESIGNED BY C. R. ASHBEE

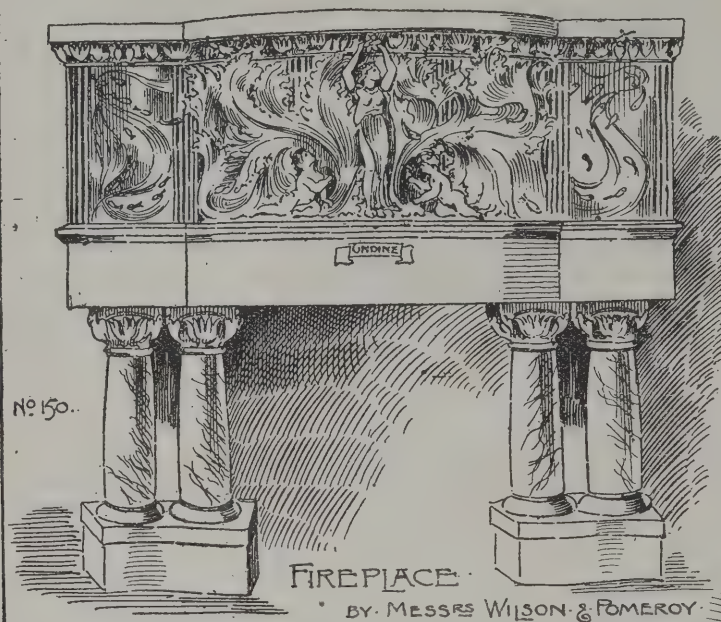
WOODWORK BY C. V. ADAMS & C. ATKINSON.

LEATHERWORK BY W. HARDIMAN.

(GUILD AND SCHOOL OF HANDICRAFT)



No. 190.

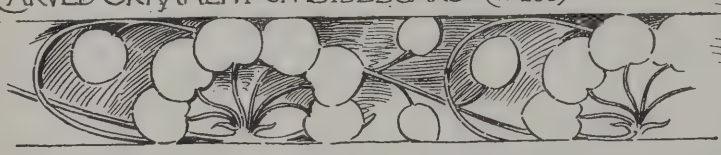


No. 150.

FIREPLACE.

BY MESSRS WILSON & POMEROY.

CARVED ORNAMENT ON SIDEBOARD (No. 238)



DESIGNED BY CHAS. SPOONER. EXECUTED BY T. & J. WALL & CHAS. SPOONER.

NEW FURNITURE EXHIBITS

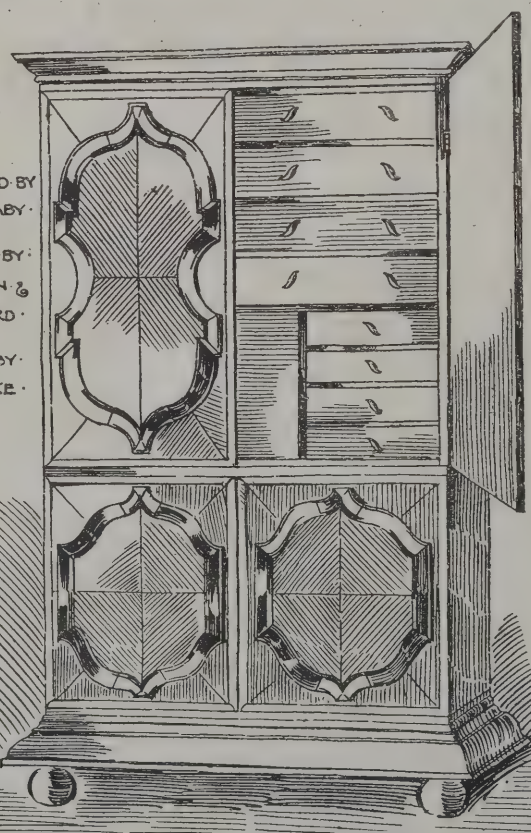
(AT THE ARTS & CRAFTS EXHIBITION)

No. 316.

DESIGNED BY W. R. LETHABY.

EXECUTED BY A. BOWEN & THOS WORD.

INLAY BY E. HOOKE.



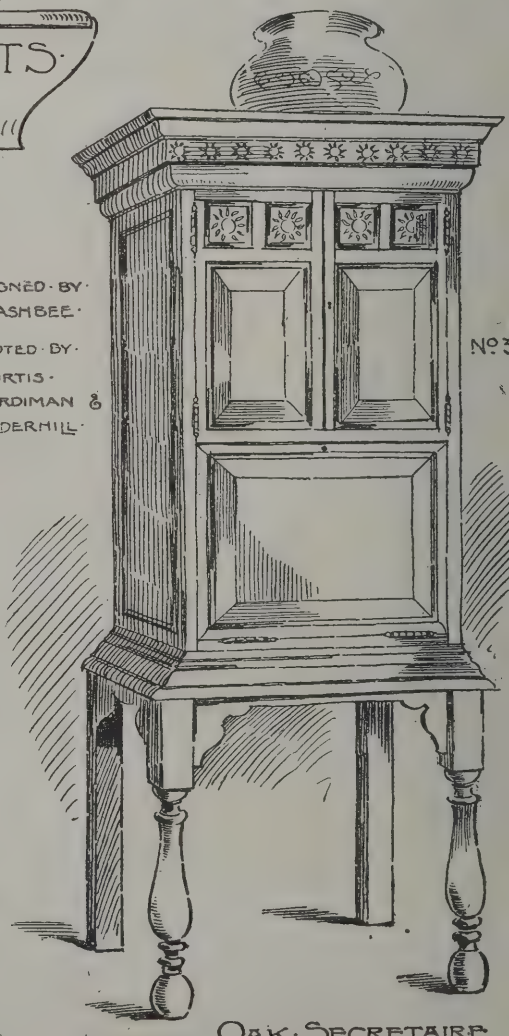
WALNUT CABINET

EXHIBITED BY MARSH, JONES & CRIBB.

DESIGNED BY C. R. ASHBEE.

EXECUTED BY W. CURTIS, W. HARDIMAN & R. UNDERHILL.

No. 374.



OAK SECRETAIRE

(GUILD & SCHOOL OF HANDICRAFT)

E. Aguecellor. del.

B. DE LLAGANA SC.

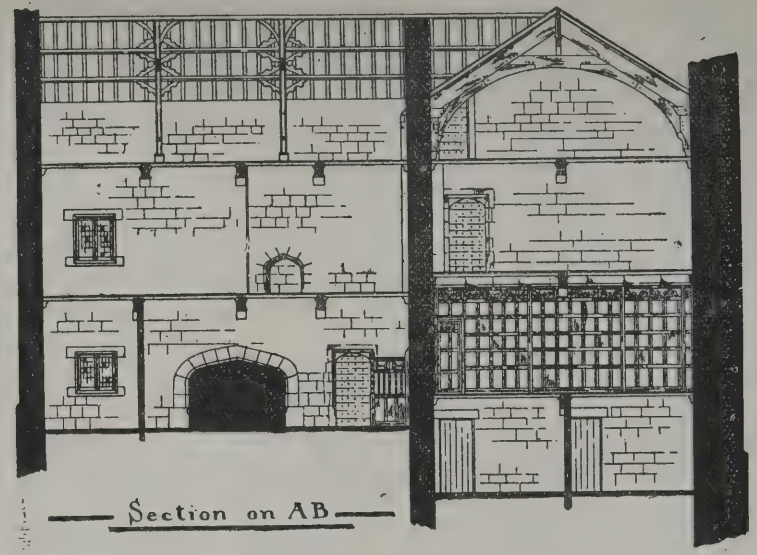


South Elevation

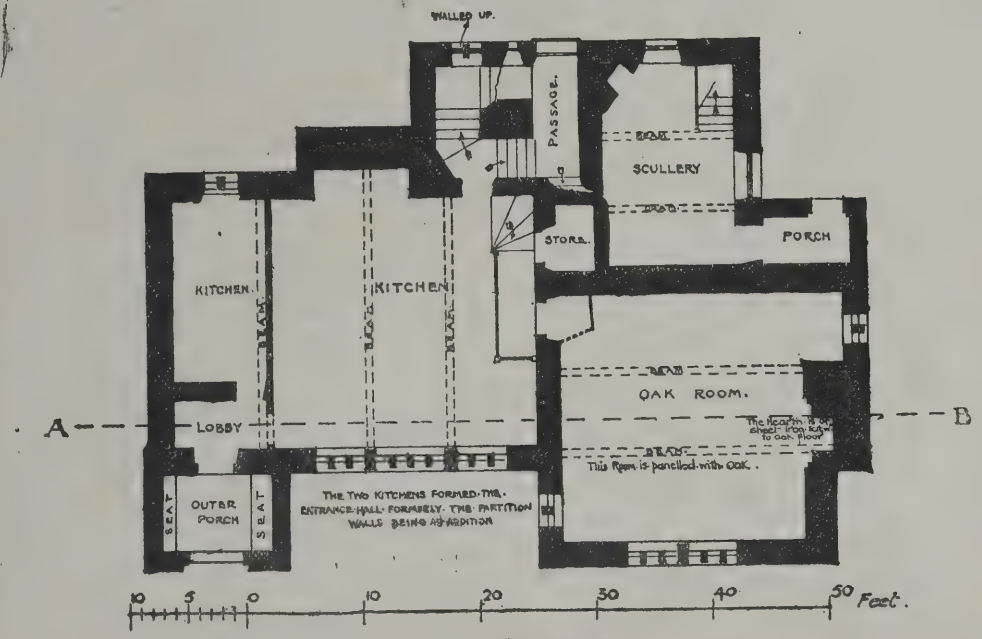
SWINSTY OLD HALL
NR OTLEY · YORKS

MEASURED DRAWINGS
BY WILFRID WARD SMITH
LEEDS

(DATE A.D. 1537)



Section on AB



Ground Floor



North Elevation

CONTEMPORARY BRITISH ARCHITECTS.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

MR. WILLIAM J. ANDERSON, who is President of the Glasgow Architectural Association, commenced his professional studies in 1877 in the ancient city of St. Andrew's, thereafter being, for a short time, in the employment of Messrs. R. Rowand Anderson and G. Washington Browne, in Edinburgh. Since then he has been for a number of years in the offices of Mr. T. L. Watson, F.R.I.B.A., and Mr. William Leiper, F.R.I.B.A., of Glasgow. He has been twice vice-president of the Glasgow Architectural Association, and in 1887 he gained the Alexander Thomson scholarship of £60 for the study of Classical architecture on the first occasion on which it was offered for competition, making a tour in Italy in 1888. Early this year he published a folio volume of measured drawings and sketches of Italian palazzi, churches, &c., under the title of "Architectural Studies in Italy." His portrait is by Mr. Walton Adams, of Reading, Berks.

Mr. E. P. Loftus Brock, F.S.A., entered the offices of Messrs. W. G. and E. Habershon in 1851, having previously been elected an architectural student of the Royal Academy Schools. He remained there until the two brothers disconnected their practices, when he became Mr. E. Habershon's managing clerk, and acted in this capacity for many years. Having acquired partnership with Mr. Habershon, the firm then known as E. Habershon and Brock carried on practice for a lengthened period, during which the large house, Normanhurst Court, Battle, now the seat of Lord Brassey, was erected for the late Mr. Brassey; also the rebuilding of Ore Place and various new houses on the St. Helen's estate, Hastings; a mansion at Bournemouth, a picture gallery at Baldstow; the village hospital, East Grinstead; masters' houses at Harrow, for the Rev. Dr. Vaughan; the laying-out of the Manor estate, Wallington; Mr. Cawston's estate, Balham; the Custom House land for Mr. Brassey; estates at Kilburn, Godstone, Harrow, Teignmouth, Highgate, &c., with most of the buildings and roads. A goodly number of churches were erected or restored, among them St. Augustine's, Highbury New Park; Park Presbyterian Church, Highbury; Hammerwood Church, Sussex; a church for Lady Sampson at Rowfant; Hethersgill Church, Cumberland; Wallington Church; St. Helen's, Ore, Sussex, where, by Mr. Brock's efforts, the ancient portions of the former church were allowed to remain as a ruin; St. Andrew's, Hastings; Ellacombe Church, Torquay; Ebernoe Church; the remodelling of St. Saviour's, Hans-place, Chelsea; St. Paul's, Carlisle; St. John's, Cotehill, Cumberland; St. Paul's, Newbarns, Barrow-in-Furness; the rebuilding of the church at Dallington, except its ancient spire, and of St. Mark's, Horsham, &c. On the retirement of Mr. E. Habershon a few years since, he left his share of the practice to Mr. Loftus Brock, who carried on the works in progress, and has erected several others. Among these may be mentioned the various homes of the National Refuges Society, including the re-modelling of the old Manor House, Ealing, and the old mansion, Fortescue House, Twickenham, to adapt them for homes for girls and boys respectively; the new buildings at Sudbury Hall, the Bisley Industrial Home, and the Shaftesbury Home, near to it. Very recently the large block of buildings, Shaftesbury House, Shaftesbury-avenue, the foundation-stone of which was laid by the Prince of Wales; the German Orphanage, Dalston, and schools at Pentonville, Felbridge, Hastings, Newhaven, and the Missionary College, Palestine-place. Churches have been built at Newhaven, Iping Marsh, St. Columb's, Notting Hill; St. Philip's, Cambridge; St. Matthias, Lincoln; and others have been repaired at Westbere, Coldred, and Staple, in Kent; Tollesbury, Essex; Preston Bissett, Bucks; St. Mary's, West Kensington, has been remodelled; Iping Church, nearly rebuilt; a new chancel erected to St. Mark's, Horsham; the old ruin, St. Botolph's, Colchester, strengthened; additions made to Broadwater Church, &c. Among general works, the Scottish Club, Dover-street, has been enlarged; Granville-chambers, New Oxford-street, erected; and also various mission halls and estates. Mr. Loftus Brock is a Fellow of the Society of Antiquaries, and also of the Royal Institute of British Architects, and he is "Architect" to the quaint club, "Ye Sette of Odd Volumes." For many years he has held the office of Honorary Secretary to the British Archæological Association, and also to the Society for the Encouragement of the Fine Arts. He is the author of a great many papers and essays on antiquarian subjects, which are printed in most of the archæological journals. Mr. Loftus Brock's portrait was produced by Messrs. Henry Webster and Son, of Bayswater.

Mr. Francis T. Dollman, A.R.I.B.A., was professionally educated in the office of Augustus Pugin, father of the eminent Augustus Welby Pugin. Welby Pugin's great powers were developed at a very early age, and the stock of office anecdotes connected with him, his father, and Mr. Dollman's fellow pupils (chief among whom were Benjamin Ferrey, Talbot Bury, and Joseph Nash, all of whom have now passed away) is almost endless. After Augustus Pugin's death Mr. Dollman entered the late George Basevi's office, where he remained till Basevi's most untimely death at Ely Cathedral in 1845. During that period of 12 years Mr. Dollman assisted Mr. Basevi at the commencement, and during the progress of his great architectural work the Fitzwilliam Museum at Cambridge, as well as numerous other buildings, of which he was the architect. After Mr. Basevi's death Mr. Dollman's own professional career may be said to have commenced (church work being his chief speciality) at Clapton and in other parts of England. Mr. Dollman has been the author of several architectural works—viz., on "Ancient Pulpits," followed a few years afterwards by a work in two volumes, on "Ancient Domestic Architecture," and subsequently by the "History and Illustrations of the Grand Old Priory Church of St. Mary Overie, Southwark." The above is a brief general summary of Mr. Dollman's chief professional labours during a period of upwards of 50 years. The portrait here given was taken this summer by Messrs. Debenham and Gould, of Bournemouth.

Mr. F. W. Stevens, C.I.E., F.R.I.B.A., A.M.I.C.E., was born on the 11th May, 1847. He was articled to Mr. Charles E. Davis, F.S.A., &c., architect and civil engineer, city surveyor of works to the Corporation of Bath, and afterwards was his assistant until he passed a competitive examination at the India Office, London, in July, 1867, for an appointment in the India Public Works Department as an assistant engineer. He retired from the Government service under Special Pension Rules in 1879, and joined the staff of the Great Indian Peninsula Railway Company. The following are among the principal public works designed and carried out by Mr. Stevens in Bombay:—Royal Alfred Sailors' Home, Post Office Mews and superintendent's residence; Great Indian Peninsular Railway, Victoria Terminal Buildings (this work is one of the most extensive of its kind in existence: the design was exhibited at the Royal Academy in 1881, and was illustrated in the BUILDING NEWS); new Bombay Municipal Buildings, now in course of erection, illustrated in the BUILDING NEWS last week. Besides these buildings, he designed proposed Bombay Exhibition Buildings in 1869, and those for 1886 in conjunction with Mr. John Griffiths, the well-known principal of the School of Art; new G.I.P. Railway Station and residences at Byculla; Igretpuri Church, residences for railway officials (comprising three large blocks of buildings three stories high), railway guards' waiting-room, &c., proposed to be erected at Boree Bunder, Bombay; buildings in connection with the Agra Water Works, and residence at Lanowli for Mr. Grattan Geary. He also executed drainage works, water supply, sea walls, roads, reclamations, and had charge of the maintenance of such works when executive engineer, Presidency Division. Mr. Stevens was specially selected by the G.I.P. Railway Company from the Public Works Department, with the approval of Government, as a salaried officer to design and carry out their Bombay Terminal Works (they having failed to obtain suitable designs from England), which extended over ten years, and the Directors of the Company, with the approval of the Government of India, presented him with a bonus of 5,000Rs. in appreciation of the services rendered by him to the Company on the completion of the works. Mr. Stevens commenced private practice in July, 1888, and is now engaged on the New Bombay Municipal Buildings and other works. He is frequently engaged on the valuation of properties, arbitrations, &c. He is a Justice of the Peace for Bombay, a Fellow of the University, and a Co panion of the Order of the Indian Empire, c ferred upon him by her Majesty the Queen January 1, 1889, for distinguished services r dered in connection with the public buildings Bombay. He was elected an Associate Mem of the Institution of Civil Engineers in Decemb 1871, and a Fellow of the Royal Institute of Brit Architects in April, 1883. His portrait v taken for our series by Mr. P. Vuccino, Bombay.

Mr. F. H. Pownall, F.R.I.B.A., was artic to the late Mr. S. W. Daukes, in whose office served his time. He has since for many ye past carried on a considerable practice both London and the country. Amongst numerc other buildings, both public and private, he h erected churches at Carleton-in-Craven, Cono ley, St. George's-in-the-East, Southboroug Whitton, Holloway, Maiden-lane, Grays, E Grinstead, Dean, near Salisbury, and elsewher besides many school and conventual building In conjunction with the late Mr. W. Youn with whom he was for a time in partnership, has been successful in several competitions, o of which was that for the Borough branch of t London and County Bank, subsequently erect under their direction. Having been elected succeed the late Mr. William Moseley as su veyor to the Justices of Middlesex, Mr. Pown has had the designing and carrying out of mar large county works, amongst which have bee the rebuilding of Coldbath Fields Prison, t alterations of, and additions to, the Session House, Clerkenwell, and the erection of th Banstead Lunatic Asylum. Under the Loc Government Act, 1888, Mr. Pownall became transferred officer, and he now holds the appoint ment of county surveyor under the Count Council of Middlesex. The portrait herewit reproduced is by Messrs. Naudin and Co., c Kensington.

Mr. E. M. Bruce Vaughan, who is a native c Cardiff, was born in 1856. He was a pupil c Mr. W. D. Blessley, and a successful student a the Cardiff Science and Art Schools, and in 188 won the medal of the Architectural Association Mr. Vaughan commenced practice in 1881, an since that time has been extensively engaged with church building in each of the four Sees o Wales, having built twenty-five churches, restored seven others, and built several parsonage houses Amongst his works executed are the following Christ Church, Llanelly (won in competition) Christ Church, Ferndale; St. John's Church Cymmer; Eglwys Dewi Sant, Cardiff; St. Luke's Church, Cwmbwrla, Swansea; St. Hiedas, Griffithstown, Newport; Morristown Church, Swansea; and Southsea Church, Wrexham, North Wales. He also restored the parish churches of Begelly, Pembrokeshire; Dwygybylchi, Pennaemmawr, North Wales, and the Parish Church of Eglwysilan. Among his public buildings are Llanelly Hospital (won in competition), Aberystwith Infirmary, "Victoria Buildings," Cardiff; Morewood Memorial Buildings, Llanelly, Grangetown Board Schools, Cardiff, for 150 children, and the Radnor-road Board Schools, Cardiff, for 150 children, the latter won in competition. Of his domestic work we may mention "Ty-to-Maen," St. Mellon's, one of the largest country residences in the district of Cardiff, and illustrated in our pages more than once, "Glyncoed, Llanelly," Pentyrch Vicarage, and the Vicarage at Llwynypia. He is a Captain of the 3rd Volunteer Battalion of the Welsh Regiment, and until the recent amalgamation commanded the 2nd Cardiff detachment of that regiment. His portrait is by Mr. W. J. Long, Queen-street, Cardiff.

A BOOK FOR BUILDERS AND TIMBER-MERCHANTS.*

WE have before us, in the above work, an old acquaintance in a new dress—a useful trade manual which has, in its size, far outgrown its former representatives or early editions. It deals with various treatises, tables, rules, problems, methods, and notes, some of which are altogether new, others freely extended or developed. It is a pocket-book of notes and cuts, ready ways and methods, memoranda, and useful table, framed to suit the timber-merchant or dealer, the clerk or assistant, the architect, and the general builder. It is framed to meet

* The Timber Merchant's and Builder's *Vade Mecum* (5th Edition). By GEO. BOUSFIELD. London: W. Rider and Son.

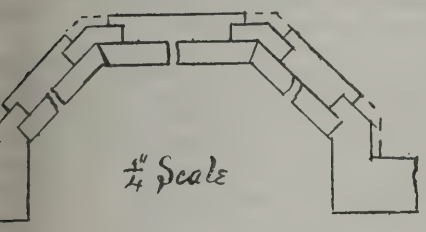
times, when men of business, to keep in line, vell up to the requirements of the day, need ave every calculation made for them, and y detail that can possibly be scheduled, lated, or codified placed ready to them. Mr. . Bousfield, who is the patentee of the *vade m* slide-rule, which has been before the trade er most favoured conditions for some time, s a treatise, by way of addenda to this pub- tion, on this mathematical instrument—a tise in which he has done his best to drive theory and practice of this rule home to the plest mind. There can be little doubt that cost of the entire work will be amply repaid the fund of knowledge imparted on this detail ne.

ARPENTRY AND JOINERY.—XXXIV.

NDOW FINISHING (*continued*).—BAY WINDOWS.

HESE form a very important feature in "domestic architecture," as both externally internally they are capable of a great variety treatment. Any window which from its plan

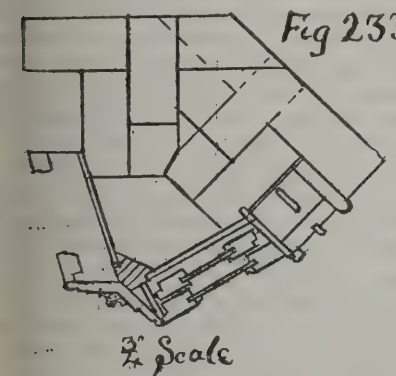
Fig 232



uses a distinct *bay* or recess in the room may be yled a *bay window*; but there are, it is probable, ore of this class of windows, *octagon* in plan, an in almost any other outline, and they will be rst dealt with.

Fig. 232 gives a skeleton outline of the plan of ie piers, between which the sash-frames are laced. The sash-frames would be put in in the rdinary way, although in some of the common lass of houses in which bay windows often occur ie three sash frames are fastened together at the roper angles by pieces nailed upon the heads and ills (top side) of the frames, so as to connect ach two together, and when the under structure f the window up to the sill has been built, the

Fig 233

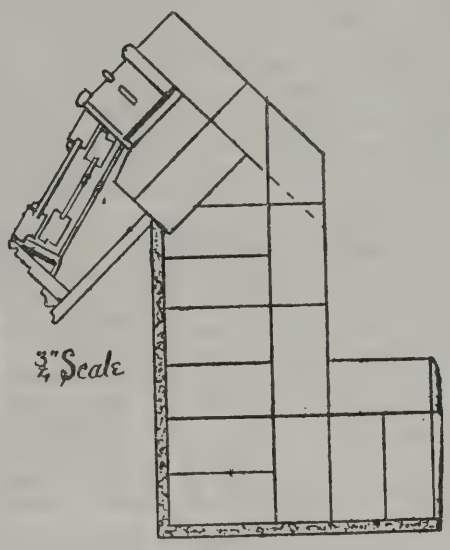


three frames thus connected are set upon it, *plumbed and levelled*, and then what forms the brick reveals just built against them; no brick-work occurring between the frames.

Of course this is a very flimsy construction, but it is allowed to pass muster by the authorities. The bay window may be carried up two stories, or as high as the house is reared, and its eave level with the house eaves, or it may be stopped at the first story, when it may be roofed against the side wall, diagonals occurring at each angle, or it may be flagged and cemented so as to be water-tight; or joisted, sheeted, and leaded with a low parapet round it above this leaded floor; a pipe conducting the water from this covering to the sewer or grating provided, a little box (leaded of course), and into which the water flows, is arranged between the joisting, and it is from this box the aforesaid pipe carries off the water. It need hardly be mentioned that a slight fall should be arranged to this box in order to keep the covering of the bay window dry; pieces differing in thickness will be nailed on the top edges of the joist before the sheeting is nailed down.

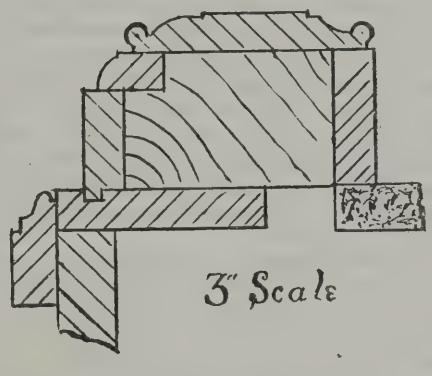
Thus much by way of introduction to the internal work. One more remark had better here

Fig 234



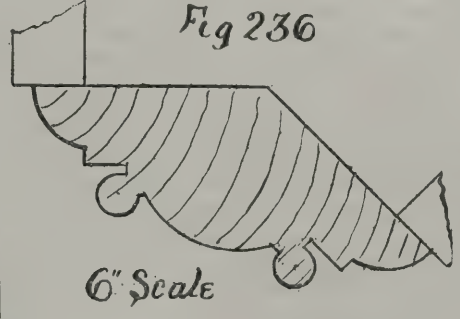
be made. A beam, either of wood or iron, reaches across the opening formed in the side-wall for the window recess or bay; the height of this varies according to this finishing of the window as compared with the room in which the window is situated, as it is not unusual to have the ceiling of the bay window level with and forming part of

Fig 235



the ceiling of the room, the plaster cornice being carried round the bay. In other cases, again, the squareness of the room is preserved so far as ceiling and cornice are concerned, and the beam referred to is shown as a distinct beam, being panelled, &c., and the ceiling or soffit of bay

Fig 236



window being treated as a separate feature. Of course the finishing of the wood-work of the window is more particularly to be treated of here.

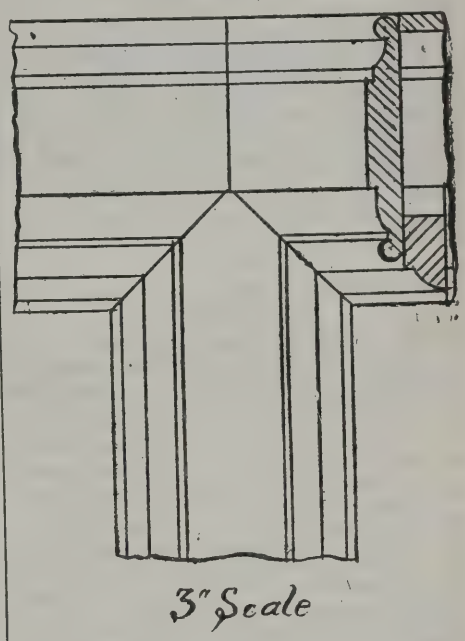
Now it will be readily seen from Fig. 232 that the window there shown, if required to have shutters, may be treated as formed of three separate and almost independent windows, and be finished to suit this.

Fig. 233 gives the plan of one of the central brick or stone mullions, and shows the plan of sash-frame and shutters, also joining of architraves, which, as is seen, is by a *mitre*. These should be fitted and fastened together, and then set up in their places and firmly fixed. In such case the outer moulding and capping of the architrave occur on the two outer architraves only, and are carried round along the top architraves, being mitred in the angles occurring at the mullions similar to the architraves.

These windows forming the bay would have backs, elbows, and soffits similar to an ordinary "full trimmed" window.

Fig. 234 gives the plan of the outer jambs or piers of bay window, which will, of course, be

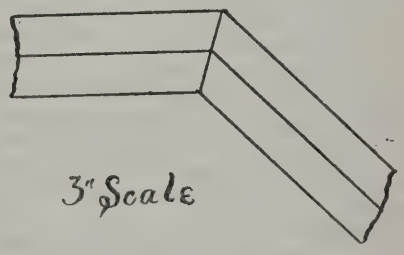
Fig 237



right and left hand, but it is the right hand one which is shown. It is expected there will be no difficulty in understanding these drawings.

It may be, however, that it is desirable to have lighter mullions, and no shutters, in which case a narrow jamb-lining, say 2½in. wide, may be substituted for the shutters; the jamb-lining will serve for provision for sun-blinds, and an architrave will form the completion of the finishing

Fig 238



above or upon these jamb-linings, which architrave may have upon its outer edge a similar moulding to that which occurs or is wrought upon the skirting of the room, and of course in such case the moulding referred to will continue up the architraves of one side, and down the architraves of the other side, and along the skirting and round the various architraves to door-jambs or other windows in the room.

This style of continuing this moulding is very fashionable with some architects nowadays.

Fig. 235 gives a section of part of sash-frame, stile, jamb-lining, architrave, &c., such as has been mentioned above, and taken from an actual case in the writer's neighbourhood.

Fig. 236 gives the section of the moulding which was fixed so as to cover the jamb-linings of the centre mullions of the bay window.

It will be seen that this moulding may be

divided in the centre, and each half is the counterpart of the other; it will also be seen that it exactly conforms with the architrave as far as it extends. The result of this is that this moulding occurring at the mullions continues up and forms intersections with the head in elevation, as shown in Fig. 237. It will be found that the mitres of the moulding up mullions are of a double kind, on account of the side lights of the bay window forming an obtuse angle with the centre light, and the top architrave, from the point where the two intersections of the mullion moulding terminate upwards to the outer edge of each respective head, meet together at the angle of the intersection of front and back faces of the architraves, shown in Fig. 238.

This window had rather a neat and effective appearance when finished; the window-backs fitting in between the jamb-linings, the capping of backs extending out to within $\frac{1}{4}$in. of the back of the architrave, and a skirting similar to that of the room being fixed against each back. The outer architraves were *grounded* for, as the line of the plaster was continuous with that of the inner face of side sash frames. In Fig. 235, at the back edge of the architrave, is shown the lining piece to cover the grounding, and reaching to the plaster, which is shown, as stated, in line with the inner casing. A bead occurs on the lining piece to *break joint* with the plaster. Section lines are drawn across the grounding piece of Fig. 235, showing fully how the whole arrangement is got up.

THE LONDON COUNTY COUNCIL AND CONTRACTS.

THE special committee appointed by the London County Council on the question of contracts will present to the next meeting of the Council a report on the subject. The committee have received a deputation from the London Building Trades' Committee, and inquired into the matter of fair contracts. The committee had an interview with the London Building Trades' Committee, and also received deputations from the Amalgamated Union of Street-Masons, Paviors, and Stone-Dressers, and the London Amalgamated Trade Society of Upholsterers. The representations made by each of these deputations were in the main of similar character, and may be briefly summarised as follows:—That contractors were in the habit of driving their workmen to scamp their work, and also of employing inferior workmen at low wages; that sub-contracting was a common practice; that sub-contractors were unscrupulous in the means they adopted to insure a profit; and that the workmen and the quality of the work alike suffered in consequence. The deputations urged that the Council should exercise a rigorous supervision over all work done for it under contract; that sub-contracting should be absolutely prohibited; that a scale of the wages to be paid to the workmen should be attached to every contract; that all contractors should be compelled to observe the trade union rules in relation to hours of labour and rates of wages; that the Council should impose heavy penalties upon contractors offending in these respects; and, further, that all the Council's contracts should only be let to London firms, and the work under them be executed by London workmen. The deputations were unanimous in the desire that the Council should employ its own workmen, and should carry out its own works, without the intervention of contractors.

The committee can find no positive evidence that inferior work has been done for the Council or for its predecessor, the Metropolitan Board of Works. They are, however, alive to the importance of keen supervision being exercised over works of construction, and are of opinion that the clerks of works employed by the Council should be highly trained specialists, who should be capable of promptly detecting inferior materials or bad workmanship.

With the allegations as to sub-contracting the committee found it difficult to deal, having regard to the impossibility of defining the real meaning of the term. Workmen apply the term sub-contracting to any other form of labour than day work. Piece work, task work, bonuses to foremen, or any arrangement made of a special kind is, in their opinion, sweating or sub-contracting. The clause usually inserted in the Council's contracts with reference to this subject appears to the committee to be sufficiently stringent for the protection of the workmen employed, and the London Building Trades Committee concurred with this view. The committee are of opinion that certain cases should be provided for by an addition being made to the clause, and they recommend:—

"(*a*) That the following words be added to the clause now inserted in the Council's contracts with reference to sub-letting or sub-contracting:—'But the Council retains power to allow the contractor to sub-let such special portions of the work as would not be produced or carried out by him in the ordinary course of his business.'"

If the letting of the Council's contracts could be limited to London firms only, and the work were carried out by London workmen exclusively, the committee are of opinion that the adoption of this course would inevitably add materially to the cost of the works carried out by the Council.

With regard to the suggestion that the Council should employ its own workmen and carry out its own works without the intervention of a contractor, the committee think this could not be done without involving a very large outlay for plant, which the Council would not be justified in incurring. They recommend, however—

"(*b*) That all work of a continuous nature, which does not involve a large outlay for plant, &c, such as the cleansing and watching of the bridges and embankments, &c., under the control of the Council, be executed as far as possible by men directly employed by the Council, or without the intervention of a contractor."

In conclusion, the committee propose that a copy of their report be sent to the London Building Trades Committee, the Amalgamated Union of Street Masons, Paviors, and Stone-Dressers, and the London Amalgamated Trade Society of Upholsterers.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

ARCHITECTURAL ASSOCIATION ADVANCED CLASS OF CONSTRUCTION AND PRACTICE.—At the meeting on Wednesday evening, Mr. Francis Hooper read a paper on "Artisans' Dwellings," dealing chiefly with the principles governing their arrangement. The discussion was opened at some length by Mr. Owen Fleming, and the points raised by him and Mr. Hooper were of such importance that the further discussion was adjourned until November 26th. The interest which a competition can excite is thus forcibly illustrated, the members of the class being mostly young architects just starting practice. It is hoped at the next meeting to secure the attendance of several representative officials.

BRADFORD ARCHITECTS' AND SURVEYORS' ASSOCIATION.—The first meeting of the second winter session of this association was held on Tuesday. An address was given by the President, Mr. J. Ledingham, A.R.I.B.A., who suggested that students should give more attention to the small and practical details of their profession, in order that they might become thoroughly versed in all modern building appliances and their method of application and use. A feature of interest in the meeting was the examination and criticism of the various drawings sent in for the Architects' and Surveyors' Competition, and which were exhibited in the room. Messrs. E. Milnes, T. H. Healey, and C. H. Hargreaves, architects, were the adjudicators of the former competition, and the successful competitors were Messrs. W. E. V. Crompton, who obtained the President's prize, and Mr. J. E. Taylor, to whom was awarded the second prize. The prize for the Surveyors' competition was obtained by Mr. H. Pyrah. A unanimous vote of thanks was passed to the adjudicators of the competitions, and for the practical nature of the report they had given. A cordial vote of thanks was also awarded to the president, who, in reply, again offered to give a prize as an incentive to the work of the members during the coming year.

DUNDEE INSTITUTE OF ARCHITECTURE, SCIENCE, AND ART.—The winter session of this institute was inaugurated on Wednesday, the 5th inst., by a *conversazione* in the Victoria Gallery, Dundee. An address was given by Mr. Ower, the President, who, after congratulating the members on the growth and success of the Institute, suggested that if Dundee was to be made an art centre it would not be by sending everything worth doing to Mr. London, R.A., or Mr. Edinburgh, R.S.A. They ought as citizens to give their own fellow townsmen a first chance, and their most kindly thoughts, and should see that in any competition the designs were adjudicated on by properly qualified persons. If this had always been done they would not have had to deplore the fact that many of the best artists in various branches of the fine arts had had to leave the city.

EDINBURGH ARCHITECTURAL ASSOCIATION.—A special meeting of this association was held on the 6th inst. to consider the schemes of the North British and Caledonian Railways. Mr. Archibald Macpherson, architect, presided, and after much discussion, two resolutions were passed—the first urging the city town council to oppose any encroachment on the Princes-street Gardens unless such was proved to be absolutely essential for the public convenience, and the second submitting that any operations which would involve the possibility of injury to public buildings in Princes-street or elsewhere should be strenuously resisted. Another motion, protesting against any embankment or tunnel in Princes-street, was carried by 18 votes to 10. A fourth resolution was adopted in favour of having plans, sections, and elevations of the alterations at the Waverley Station and of the changes contemplated on the architecture of the city by the Caledonian project laid before the town council and the public.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—The inaugural meeting of this society will be held on Tuesday evening next, when the President, Mr. William H. Thorp, will deliver an address and the distribution of prizes will take place. The syllabus for the session is as follows: Monday, Dec. 3, social evening with "Descriptive Notes on Normandy," by Mr. F. Clibborn, of Birkenhead; Thursday, Dec. 18, "At the Cathedral Door," by Mr. Wyke Bayliss, P.R.S.B.A.; Monday, Jan. 12, "Decorative Art in its Relation to Architecture," by Mr. Heywood Rider, head master of the Leeds School of Art; Jan. 26, Sketching Club evening; Feb. 16, "The Timber-framed Buildings of East Anglia," by Mr. John Shewell Corder, of Ipswich; March 2, Sketching Club evening; Tuesday, March 17, "Recent Practice in the Designs of Ironwork for Buildings," by Mr. G. F. Charnock, A.M.I.C.E, Bradford Technical College; Monday, April 13, "Mahogany and other Fancy Woods used for Constructive and Decorative Purposes," by Mr. F. Tiffany; April 27, Annual Meeting for Election of Officers.

MANCHESTER ARCHITECTURAL ASSOCIATION.—The 16th annual report of this Association states that the progress previously recorded has been fully maintained. The membership now shows a total of 91, being a net increase of seven, and of these 91 members no fewer than 46 are practising architects. During the session papers were read by the President (Mr. J. H. Woodhouse) and Messrs. F. M. Simpson, W. H. Bidlake, F. B. Smith, Lawrence Booth, F. R. L. Edwards, J. A. Gotch, F. R. Farrow, T. Chadwick, and W. E. Potts. The negotiations between the Association and the Manchester Society of Architects, with a view to reconstruction as one body, begun in October 1889, were finally broken off without action being taken, and while the committee still considered it desirable to have one local society, they regretted that at present the new rules of the M.S.A. did not seem to offer conditions for the work of the Association as favourable as those under which it was now carried on. The syllabus for the session, which was opened on Tuesday week with an address from the newly erected president, Mr. T. Chadwick, is as follows:—November 18 (Tuesday next) "A Three Months' Tour in Belgium and Northern France," by Mr. P. E. Barker. December 2, "Terracotta: its Advantages Relative to Town and City Buildings," by Mr. G. H. Willoughby. January 6, "Paving Stones," by Mr. S. S. Platt, Borough Surveyor, Rochdale; January 20, "Some Typical Greek Buildings," by Mr. R. Elsey Smith, London. February 3, "Houses for Working Men," by Mr. Henry Ross, of Accrington; February 17, "The Renaissance in Northamptonshire," by Mr. J. A. Gotch, of Kettering. March 3, "The Late Paris Exhibition," by Mr. Banister Fletcher, jun., of London; March 18, paper by Mr. Edgar Wood, Oldham.

At the last meeting of the Glasgow City Council, Mr. Councillor Gray was elected master of works.

Building Intelligence.

HADDINGTON.—The internal renovation of the parish or Abbey Church will be commenced in January. Some weeks ago a committee appointed Messrs. Hay and Henderson, architects, Edinburgh, to prepare plans and specifications for reflooring, reseating, and heating the church, taking down the side galleries, and other improvements, and these have been approved. The contribution by the heritors towards the proposed improvements has been fixed at £850, and the congregation have raised about £2,300 by subscription. Under the plan as presently approved, the pulpit is to be removed from the middle of the church to the east end, and accommodation will be provided for an organ. In connection with the renovation of the church, the Earl of Wemyss has intimated his wish to restore the south end of the transept, filling in the tracery of the window, with a suitable doorway underneath, as a memorial to his late father. His Lordship has further submitted a sketch of the proposed doorway and window, which has been prepared by Mr. Young, architect, London, the designer of Gosforth New House.

MANCHESTER.—A crematorium is about to be built on land adjoining and practically forming an extension of the Southern Cemetery. The architects are Messrs. Salomons and Steinthal, of Manchester, and the work is to be proceeded with at once. The building will consist of a hall or chapel containing the furnace, with columbaria for the reception of the urns and memorial tablets. The hall will be about 50ft. by 25ft., and of proportionate height. In the centre of one end against the wall will be placed the furnace, concealed in an ornamental marble shell. A door on each side of the furnace will give access to the vestry and record room, and on the other side a corresponding passage will lead to the room for the gas generator, from which in turn the descent will be continued to the engineer's room and the basement. On each side the hall will be flanked by an open arched colonnading, raised three feet above the level of the ground, and forming a columbarium. Recesses for the urns will be provided in the exterior of the walls of the hall, and should more wall space be required for this purpose in the future the colonnading may be extended either at the sides or to the rear of the main building, forming an open cloister, or, if found necessary, a series of cloisters. Dignity is given to the main entrance by the introduction of an arched and lofty porch. A tower containing and masking the flue from the furnace is a feature in the design. The directors intend not only to provide columbaria for the reception of urns, but also to make provision for the burial of urns in the soil, after the style of Milan and other cemeteries, where many of the graves in which cremated bodies have been deposited lend themselves to floral decoration and have the same appearance as ordinary burial grounds.

MILFORD HAVEN.—The reopening of Dale Church, Milford Haven, after careful restoration, from designs and under the superintendence of Messrs. Kempson and Fowler, architects, Llandaff, took place on the 4th November. The works consist of the repair of the modern roofs, which have been strengthened with boarding and moulded ribs. The rotten old boarded floors have been relaid with blocks. The tile floors have been taken up and relaid. All gravestones are left in position or relaid as they were, but on solid concrete. There are new seats, choir benches, and desks. The pulpit is of oak on a stone base. Three old wooden windows have given place to stone ones, which are glazed with beautiful glass in patterns. The ground round about the church has been excavated, so that the floor of the church is no longer under the ground-line. The tower is opened out to view by the removal of the plastered partition which filled its arch. In all cases where stone has been required, either Forest or local stone has been used. The font, which is a modern marble one of Classic design, remains in position.

NEWCASTLE.—On Saturday, the 1st inst., new business premises for the Swalwell Co-operative Society, near Newcastle-on-Tyne, were opened by the president, Mr. W. Fletcher, who was presented with a silver key. The buildings, which are of Queen Anne design, have a frontage of 90ft. into Market-lane, and comprise large millinery and drapery shop, butcher's shop, and flour store, with offices and lecture hall over, and adjoining are two dwelling-houses to be used for further business premises when required. They are built of Choppington pressed bricks, with Nunriding stone dressings. The masonry and brickwork have been executed by Messrs. Moorhead and Arkle, of Benwell, and the joinery work and remainder of the trades by Mr. Richard Wood, of Swalwell, from designs by Mr. J. W. Taylor, architect, Newcastle.

TREDEGAR, MON.—The new Church of St. James, at Georgetown, near Tredegar, was dedicated on the 6th inst. The church, which will accommodate 500 persons, is in the Early English style. The plans were prepared, and the commission was gained in competition by Messrs. James and Morgan, MM.S.A., of Charles-street Chambers, Cardiff, and the work has been carried out by Mr. Edward Morgan, of Tredegar, whose contract price was £2,200. The building is divided into nave and aisles by arches, supported on Corsham stone columns, with moulded caps and bases, clerestory windows being inserted over the arches to light the nave. The clergy vestry is situated on the north, and the organ-chamber on the south, side of the chancel. The walls are faced externally with blue Bedwellty stone, with grey Forest of Dean stone dressings to the doorways, windows, copings, &c. The west end gable is surmounted by a bell-cot, worked out of Forest stone, containing two bells. The roofs are covered with blue and purple slates in alternate courses. Internally the roofs are open to the ridge, and are of pitchpine, sized and varnished. The seating is also of pitchpine. The pulpit is of Corsham stone and pitchpine, moulded and carved, and the font is of Caen stone.

CHIPS.

The Somerset County Council decided on Friday to purchase Cotford Farm, midway between Bishop's Lydeard and Norton Fitzwarren railway stations, as a site for a new asylum. The farm has an area of 116 acres, and the price agreed on is £10,075, or £84 per acre. A committee was instructed to obtain plans and estimates for building on the farm a lunatic asylum for 450 patients, and capable of extension.

Mr. W. H. Radford, C.E., of Nottingham, has just been appointed consulting engineer for the new waterworks at Newcastle, Natal.

Mr. F. Newman, of Ryde, was last week elected county surveyor to the Isle of Wight County Council, from among eleven candidates.

An organ, built by Mr. Johnson, of Bristol, at a cost of £340, was opened in Christ Church, Barton Hill, near that city, on Friday.

The rural sanitary authority of Ardee have instituted Mr. Gaskin, C.E., of Dundalk, to prepare plans for the sewerage of Castle Bellingham.

The clerestory windows of the chancel of Wallasey parish church have been filled with stained glass given by various donors. On the north side are four saints more or less connected with the neighbourhood—viz., Kentigern, Chad, Hilda, and Werburgh. Facing these are figures representing SS. Agnes, Perpetua, Chrysostom, and Gregory the Great. The whole series has been produced by Messrs. Shrigley and Hunt, of Lancaster.

A stained-glass window has been placed in the chancel of All Saints', Harbury, in memory of the Rev. M. H. Hole, for twenty-two years the vicar. The window is in two lights, representing "Paul Preaching" and "Paul in Prison." Messrs. Powell and Sons, of Whitefriars, London, were the artists.

Messrs. Malkin, Edge, and Co., of Burslem, are issuing a new and well-printed specimen sheet of their manufactures, comprising tiles, slabbed hearths, panels, mounted and framed, for hanging in architects, and builders' offices, which will be very useful. They will send a mounted one to any reader on application.

The Society of Merchant Venturers have given their sanction to a scheme for connecting the Hotwells-road at Bristol with Clifton by means of a lift. The engineers are Mr. G. Croydon Marks, of Birmingham, and Mr. P. Munro, of Bristol. The scheme provides not only for a lift, but for the erection of a spa, pump-room, and promenade, adjoining Prince's-buildings. It is proposed to cut a tunnel under the present garden-grounds, and up this tunnel to lay lines of rails for the purpose of carrying the cars for the conveyance of passengers. The cars to be worked are upon the principle of the lift now in operation at Lynton, and to be worked also at Torquay and elsewhere.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

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RECEIVED.—E. and Co.—J. B. C.—R. W.—C. H. R.—P.—T. W. W.—N. St. C.—H. S. S.—A. S.

"BUILDING NEWS" DESIGNING CLUB.

DRAWING RECEIVED.—"St. Edmond."

Correspondence.

THE R.I.B.A. ASSOCIATES' EXAMINATION.

To the Editor of the BUILDING NEWS.

SIR,—Now that the R.I.B.A. Kalendar for 1890 has been published, and in it the questions set at the examinations held last March, I should feel obliged if you would allow me to indulge in a few words of criticism, not in any carping spirit, but with the hope that they may lead to the adoption of improvements. The examinations are already good, but they might be better, and, as one who may be said at times to be pitted against the examiners, I may be able to point out some of the weak spots.

With the questions upon the History of Architecture I have little fault to find. They are well set, covering the whole ground, and testing the knowledge of the candidates thoroughly; but there is too great a sameness between questions 4 and 12, showing want of proper consultation between the examiners—which has been noticed occasionally in former years, and which is further exemplified by the similarity between question 1 of this paper and question 4 of the paper on Mouldings, Features, and Ornament. This latter question—"What do you understand by Byzantine and Romanesque Architecture"?—should, it seems to me, have occurred in the History rather than in the Ornament paper, and yet, strange to say, it is one which all candidates, when being examined in Ornament, were expected to answer! Unfortunately, there was no single question upon Mediæval Mouldings—an omission of a serious nature—while that about stone-gable crosses, dealing with a minor detail, might well have been omitted.

The subject of Sanitary Science is treated as it

should be—exhaustively. It is only doubtful whether the time allowed for it be sufficient, for all will admit its extreme importance.

It is the paper upon the Strength of Materials, however, with which I have most fault to find. I contend that the subject, if it form part of the syllabus at all, should be treated as comprehensively as any other—as I am accustomed to find it treated in Civil Service examinations for architectural draughtsmen and surveyors. Instead of this, the questions set, without being truly elementary, dealing with the elementary principles of mechanics and their applications to building, are of the "catch" variety, leading to cramming of the very worst form, the learning by rote of a few formulæ, which the examiner uses year after year, without any pains being taken to understand the principles which underlie them. With these questions before them as examples of what have been set in former years, I find it most difficult to persuade students to do more than "get up"—*alias* "cram"—sufficient to meet the examiners' requirements. The formulæ employed, too, have mostly long been discarded by engineers for the purposes to which the examiner applies them, while many of the questions are so set as to reduce what might have been made good test questions of a candidate's knowledge of his subject to the level of simple algebraical problems which any well-educated boy could work out.

The question upon Planning is also open to criticism. To begin with, the area to be covered is stated to be 78 by 66 *square* feet, thus giving a cubic dimension. But, putting this slip aside, the plan is so clearly described that the important—most important—element of planning is scarcely touched upon. If there be anything which the embryo architect should be able to do rapidly and well, it is to make a satisfactory plan, and his ability to do this is scarcely tested. I would suggest, as an improvement upon the present system, that two papers instead of one be set upon the Wednesdays, the morning being devoted to getting out the *plan* of a building, from open instructions such as a client would be likely to give his architect, and the afternoon to designing elevations to suit lithographed plans supplied to each candidate.

Save that a great many—too many—questions were set upon Materials and Construction, they were sensible enough. By too great a choice being allowed, the candidate would be able to select those which could be answered from book-acquired knowledge alone, and to avoid the really valuable questions which are set to test his constructive ability—his capacity for getting satisfactorily over constructive difficulties when they arise.

As far as the portion of the Thursday afternoon paper dealing with Specifications is concerned, all is right enough; but certainly the fourth question upon Professional Practice—and it is a good one—should have appeared rather under the head of Estimating, a subject which in former years has scarcely had attention paid to it commensurate with its great practical importance to all architects in general practice.

With apologies for trespassing so largely upon your space—I am, &c.,

G. A. T. Middleton.

PATENTED PLANS.

Sir,—As an architect of some fourteen years' standing, and a practising patent agent, I am much interested in your article upon "Patenting Plans," called forth by Messrs. Flockton and Gibbs invitation to oppose the grant of letters patent upon their application, No. 19624, '89. As, however, there can be no doubt that those gentlemen actually designed the arrangement they seek to patent, practically no opposition can be entered by anyone except "on the ground that the invention has been patented in this country on an application of prior date," and that is very improbable. No doubt their application will be sealed; but whether their patent, when granted, will be valid, is another matter. It is rarely that architects in this country patent their plans, and as the competition which occasioned this case excited much attention, the matter is of great interest to the profession, and merits some attention.

You state the case fairly as "that of grouping the departments of a public building, each complete and separate in respect of its entrances, round one public hall," and the title applies the invention to "Government, county, municipal, and other public offices and courts." Let us see if this has not been anticipated.

In Mr. Waterhouse's Natural History Museum there is a central hall for the public, from which radiate three great departments—each complete and separate in respect to its entrances—and to which the public can only gain access from the central or public hall. This is the arrangement upon the ground floor; and a visitor to any department entering it from the central hall can traverse the whole of that department and return without entering upon one of the others. The public staircase in the hall is the only means of public access to the similarly isolated departments on the first and second floors above, and thus it conforms to the conditions laid down by Messrs. Flockton and Gibbs.

A somewhat similar arrangement obtains at the New Law Courts; the entrance to the several courts being from the central hall, or from a public passage way above; but this example is complicated by other entrances for the judges, lawyers, and witnesses, apart from the entrance to the main hall. The two opposite wings, which lead by two separate staircases from the entrance hall of the National Gallery, is another example, but is imperfect for want of a large central space. A much better example is that afforded by the separate arrangement of the House of Lords and the House of Commons, which, with their distinct libraries, committee rooms, and offices, are respectively entered from the large octagonal space under St. George's Tower, and to this latter only the public enter from the exterior. If my memory serves me correctly, there are similar entrances to separate departments from a domically covered room in the Bank of England: while at the British Museum, the King's Library and Roman Sculpture Gallery leading from the public hall is another good example.

The above instances are sufficient to prove that the radial principle (as it may be called) of grouping separate departments of a public building around a hall, to which only the public have access, is by no means new, and I have no doubt many examples will be found amongst French municipal buildings. But if it be objected that in the examples given the separate wings are not divided up into separate rooms, such as are shown in the Sheffield plan, the answer is that there is no patentable novelty therein, either alone or in combination with the public hall.

You truly say that every design is more or less of an invention, and ask, "Why should not the architect avail himself of the Patent Act, as well as any other inventor?" There is first the restrictions due to building regulations, in which so many things are reduced to rules, and this always hampers that free play of fancy which is required in invention. When these regulations are amended and consolidated, as mentioned by Mr. Waterhouse, it is hoped that many of them will be swept away, and more scope thus left for invention. Secondly, when an architect accepts a commission from a client, he virtually contracts to design and invent to the best of his ability, according to the circumstances of the case. But any invention thus called out is not worth the cost of patenting, as it is seldom, if ever, repeated; and, therefore, is not a marketable commodity like a machine, process, or a new manufacture. Thirdly, few architects are sufficiently familiar with the manufacturing arts to venture upon improving articles or materials which are largely repeated—except in an artistic direction—and therefore leave these to be improved by the manufacturers. A few architects do invent and patent fireproof floors, sanitary or heating devices; but they are rare exceptions. It is a pity there are not more; but I do not advocate patenting plans only, apart from special construction.

Several architectural patents have been obtained in the United States for special arrangements of buildings, principally those for city dwellings, which bear repetition, and for fire-escape construction, in addition to the copyrighting of designs such as you mention. I have myself copyrighted at Washington the drawings of my second design for the International Exhibition at Philadelphia of 1876. It was made a condition of the competition that the premiated architects should again compete amongst themselves, and that their second designs should be copyrighted, and the copyright assigned to the Commissioners. This I did, in accordance with the conditions, and I may point out as a warning that, if patenting plans become at all general, similar means are sure to be taken to protect themselves by competition committees.—I am, &c.,

J. Sinclair Fairfax.

ISLINGTON BATHS COMPETITION.

Sir,—Having had an opportunity of seeing the selected designs, I desire to point out some of the defects overlooked by the assessor, or considered by him as merits deserving award. "Comme-il-Faut," placed first, has second-class bath 72 × 27 (figured 72 × 37), a mere duck-pond, considering that 90 × 40 was the size required: this great difference ought to have excluded the design. To obtain even 72ft. length, a diving-stage is raised above the bath, and, although only 2ft. 6in. wide, is the only means of access to the w.c.'s. The stairs to the public gallery are of wood, only 3ft. wide, *with winders*—fortunately for public safety, the County Council will not permit this. When bath is used for public entertainment, the artistes have only one small dressing-room, and no means of access to that except by passing through the audience. The women's private baths are on the first floor, other designs properly showed them on ground-floor as being most convenient for supervision. Three pay-boxes are provided, thus increasing cost of management; but since the competition an amended plan shows two, and the miserably poor elevation made a little better by the addition of a tower with clock face. The laundry has but 26 washing compartments and horses, and a disinfecting chamber, a most objectionable feature, for every outbreak of illness in the neighbourhood would be attributed to the foul infectious linen, &c., at the public wash-house. No private bath is provided for superintendent's residence: one certainly should be. In selecting the above design, the assessor has ignored a design with both baths 90 by 40, another both baths 90 by 30, another first-class bath 94 by 39, and second-class bath 110 by 32, considering they are of bad proportion (?) and premiates a plan with a bath only 72 by 27! Most astonishing idea, when swimmers desire a good length of bath above all things.

"Cleanliness," the second premiated design, is full of faults, showing plainly enough the author never had erected public baths. No private baths are provided for women, although required by the conditions. The laundry and washhouse are badly arranged on first floor, and these are only obtained by providing a girder 56ft. long over the second-class swimming-bath, and placing upwards of 20ft. by 42ft. of the water-surface in deep shadow. No retiring-rooms are provided for artistes during an entertainment. Other defects of plan and design are apparent; but I will only mention the position of coals, which are at the back of the boilers, so that every time stoking is done, many journeys to and fro would be necessary: and yet, with all this, the assessor affirms that this design deserves the highest praise. How such nonsense came to be written it is impossible to say.

"Soap and Water," the third premiated design, has the dressing-boxes on one side only, a badly-proportioned second-class bath, seven first-class men's baths, six second-class men's baths, and 16 women's baths on first floor. No such apportionment can be found in any public establishment in London, and I may add elsewhere. I have called attention to these designs so that the competitors may be able to form an opinion of the award, and to express the view that in every competition the whole of the designs should be exhibited, and if two-thirds of the competitors petition the Institute, the council is to form a court of appeal to hear evidence and uphold or reverse the award as may be deemed equitable.—I am, &c.

Observer.

ISLINGTON BATHS COMPETITION.

Sir,—The award in the above competition is another remarkable instance of Professor Roger Smith's adjudication. In the instructions issued by the commissioners to architects competing, it was specially set forth, among the other particulars, that two swimming baths were required, each with a water area of 90·0 × 40·0.

Professor Smith has placed first a design which shows one bath 70·0 × 27·0. It is, however, figured 72·0 × 37.0, just 10ft. wider than it actually is, and if drawn as figured, it would be impossible to obtain the accommodation which the plan shows on the ground-floor. Moreover, Professor Smith makes no mention of this dis-

repancy in his report, but gives the size of the ath as figured, which clearly shows that, in warding the premiums, he did not give that ttention to the designs which an assessor should lo. Why he should have ignored the instruc-ions in this and other respects is a mystery; ut he should, I think, have given greater ttention to the designs that conscientiously endeavoured to follow the instructions issued by he commissioners.

There are several other points in the design which one would have thought an assessor, with a knowledge of the subject he was adjudicating upon, would have looked more clearly into before giving the award he has done; but as the commissioners, I understand, have appointed Mr. Tiltman as the architect, it is useless to refer to them, more especially as Mr. Tiltman has very considerably altered and modified all the drawings except sections.—I am, &c.,

A Competitor.

CHIPS.

The new City and South London Electric Railway will be opened to the public on Wednesday week, the 26th inst.

An action for libel, brought against Mr. J. Passmore Edwards, the proprietor of the *Echo* newspaper, was tried by Mr. Justice Vaughan Williams and a jury on Wednesday. The plaintiff, Frederick George Helmore, formerly an architect and surveyor, who started the Investors' Protection Society, complained that he had been ruined by the alleged libels. In cross-examination he admitted having been in prison and a bankrupt, and said that, after leaving prison, he invited the public to subscribe £43,000 to establish a home for waifs and strays, and went about dressed like a monk, with a cowl, and with an organ, to advertise the scheme. The jury found a verdict for the defendant, with costs.

The Hollingworth Memorial Wing, which has been added to the Church Institute at Maidstone, was opened by the Bishop of Ripon on the 5th inst. It includes a gymnasium in the basement, with recreation rooms and library on the ground floor, and a hall seated for 300 persons above. The builders are Messrs. Wallis and Sons, of Boxley-road, Maidstone.

Dunblane Hydropathic Establishment, which is said to have cost £60,000, has been sold for £16,000.

Alderman James Fowler, F.S.A., F.R.I.B.A., has been elected Mayor of Louth for the fifth time.

The recent report that a new railway was to be cut from King's Lynn, on the east coast, to Liverpool, on the west, passing through Cheshire, is confirmed. The scheme will be carried out by an independent authority. In Cheshire, the line from Buxton will cross the border and enter Macclesfield at Higher Hurdsfield, and then proceed to Sutton and Brooklands, and the railway will be carried on to Mobberly, and thence to Knutsford and Warrington. The line will cross Lincolnshire, Derbyshire, Cheshire, and Lancashire. The engineer is Mr. Cooper, of Westminster.

Messrs. E. Appleton and Son, Torquay, have been instructed to prepare schemes for the drainage and water supply of Hatherleigh.

A contract has been concluded between the Rio de Janeiro City Improvements Co., Limited, and the Government of the United States of Brazil for the drainage of the districts of Eugenho Novo and Lagoa, being suburbs of Rio. Mr. Frederick Beesley, C.E., of Westminster, is the engineer to the undertaking. The estimated cost of the works is £275,000.

The new schools, York, for the York School Board, are being warmed and ventilated throughout by means of Shorland's patent Manchester grates, supplied by Mr. E. H. Shorland, of Manchester.

The Alexandra School, Earlsfort-terrace, Dublin, which was recently erected at a cost of about £5,000, from the designs of Mr. W. Kaye Parry, M.A., Dublin, with accommodation for 250 pupils, is about to be enlarged from plans by the same architect, as the rapid increase in the number of students renders an extension of the premises absolutely necessary.

On Sunday week special services were held to celebrate the completion of the restoration of the tower of All Saints' Church, King's Bromley, near Lichfield, carried out under the superintendence of Mr. Basil Champneys, B.A. The parapet has been rebuilt, and the pinnacles restored and made higher, in accordance with the original design. A new roof has been put on the tower, and the bells have been rehung on a massive oak frame, and quartered. The general contract was placed in the hands of Mr. R. Bridgeman, sculptor, Lichfield.

Intercommunication.

QUESTIONS.

[10429.]—**Smoke from Kitchen Flue.**—Will some practical reader kindly say how I can effect a cure of the smuts emitted from top of flue of kitchen? They come out and smother the whole of roofs, and are a great nuisance in the garden.—Reader.

[10430.]—**Surveying.**—Will any experienced reader kindly give me the name of a really good, but simple, book upon surveying? Desired particularly to assist one who is engaged in making complete the set of maps of a borough where several districts have been laid out and built upon since the last Ordnance Survey of that borough; also showing best method of taking out the area (in acres, feet, or anything desired from a map or plan) of a piece of land which can, or cannot, be broken up into triangles, as the case may be.—Doubtful.

[10431.]—**Cements.**—I would like to know if there is any article, pamphlet, or book containing detailed information about the manufacture of patent cements, such as Keene's, Martin's, Parian, &c.?—Potash.

[10432.]—**Filtering Rain-Water**—Filtered rain-water is required for drinking purposes, and I should be glad if some of your correspondents could find out from experience how a filter can be constructed and renewed in a simple way. The rain water from a building (standing away from a town) covered with tiles is to be carried by stoneware drains into a tank containing about 800 gallons, and, after being purified, is to be pumped into the house. The filtering must thus take place in or adjoining the tank.—S. W.

[10433.]—**Wet Rot.**—A joisted and boarded red-wood floor of a school, erected three years ago, is completely destroyed with wet rot. The joists were placed about 18in. above ground level, and were laid on sleeper walls, and the floor had good through ventilation, with air grids on each side. As this floor is about to be renewed, will anyone give me some practical hints to prevent wet rot attacking the proposed new floor?—Z.

[10434.]—**Surveying.**—Will some experienced reader kindly state which is the best textbook on town surveying and plotting details of streets?—Young Student.

[10435.]—**Architect's Charges.**—Would someone kindly inform me what an architect is entitled to charge for completing houses partly finished? Can he charge a fee for making plan of old erections, and also 2½ per cent. for measuring up extras from contract, in addition to his 5 per cent.?—R. H. H. H.

[10436.]—**Vibration.**—Can any reader give recipe to prevent the vibration of a room during the progress of either singing or speaking? Size of room 70ft. long, 20ft. wide, 14ft. high.—C. D.

[10437.]—**Hoffmann Brick Kiln.**—Can anyone inform me where I could get full particulars for erecting a "Hoffmann" brick kiln with the latest improvements, and if you know of any work published on the subject? The interesting description in your paper some six months since does not give details of construction.—E. W. W.

REPLIES.

[10333.]—**Reredos and Rood Screen.**—I have just noticed in your issue of Oct. 3, in Replies, a letter from "G. H. G.," headed "Reredos and Rood Screen." He is wrong in stating that the screen is a recent erection. That is not so, for it formed part of the original church, and before the rebuilding of the church (except the tower) in '53 used to support the Fishermen's Gallery, as may be noticed in old engravings of the interior of the church. The cross, or rood, was put up in '87. The screen has recently been redecorated by Mr. Kewell, under the superintendence of Mr. Somers Clarke, architect, and this has, doubtless, caused your correspondent's mistake.—Charles Lynn, Churchwarden, St. Nicholas', Brighton.

[10424.]—**Book-keeping.**—If "Enquirer" will write to me, I can let him, or any other reader, have worked examples of a good system to suit contractor or jobbing builder.—F. J. W., Eastbourne House, Ryde, I.W.

The local board of Bedlington, Northumberland, have elected as their surveyor, engineer, and waterworks manager, Mr. C. A. Copland, for the past six years surveyor to the local board of Loftus-in-Cleveland.

A carved oak reredos has recently been placed in the chancel of Boylestone Church. It consists of a massive oak panel carved in very high relief, with a representation of the Lord's Supper, the canopy inclosing it comprising three depressed arches divided by elaborately-carved pinnacles, each section of the cresting being varied in treatment. The whole is in the Late Decorated style. The work was executed by Messrs. Jones and Willis, of Birmingham and London, under the personal superintendence of Mr. J. L. Naylor, diocesan architect, of Derby.

On Saturday the foundation stone of the new church of St. James was laid at the corner of Frederick and Whitehead roads, Aston. The church will consist of a nave and aisles, transept, chancel, and baptistery, together 128ft. by 51ft., and a cross nave and aisles. It is proposed to erect the chancel, vestry, and chancel aisle first, the body of the church to be a temporary arrangement of wood and iron, accommodating 700 people. The permanent portion will be executed in white bricks, relieved with red bands and stone tracery to windows, with tiled roof. The first contract is being carried out by Mr. Thomas Collins, of Tewkesbury, from plans of Mr. J. A. Chatwin, of Birmingham.

WATER SUPPLY AND SANITARY MATTERS.

Completion of the Sewerage of Heswall.—The system of sewerage at Heswall is completed. The total length of the sewers is about 4¼ miles, and they are composed of stoneware pipes of the best quality, supplied by Messrs. Doulton and Co., of St. Helens, and laid with Stanford's joints. The several sewers discharge into a large brick tank-sewer, 260ft. long by 7ft. deep, and 4ft. 8in. wide, which will serve as a reservoir to hold the sewage while the tide is up. On the ebb tide the sewage will be discharged into the river Dee through a line of cast-iron pipes, 9in. in diameter, which are carried to low-water mark, and are supported on strong timber piles firmly driven into the shore. The amount sanctioned by the Local Government Board to be expended on these works is £4,700, and it is not expected that this sum will be exceeded. The whole of the works have been designed and carried out under the personal supervision of the engineer to the authority, Mr. Charles H. Beloe, M.Inst.C.E., of Liverpool, and the contractors for the work were Messrs. Thomas and Co., of Daulby-street, Liverpool.

Dublin.—An entirely new system of drainage and sewerage is about to be undertaken at the Institute for the Deaf and Dumb, Cabra, near Dublin. The plans and specifications have been prepared by Mr. W. Kaye Parry, M.A., civil engineer, Dublin. The estimated total outlay is about £1,300 exclusive of the main outfall sewer.

Hythe, Kent.—The inauguration of the new reservoir at the Black Rock Spring at Seabrook took place recently. The new reservoir is 25ft. in diameter, 9ft. deep, and capable of containing 27,000 gallons of water. A heading has been driven into the side of the hill, at a distance of about 36ft. from the reservoir, with a branch to the north, picking up a subsidiary spring in intercepting the main spring; the heading has been filled in with a 12in. perforated pipe. The water is conveyed into a brick reservoir 3ft. square, from whence it is led by a 6in. cast-iron pipe into the reservoir. The length of the main from the reservoir to the fountain is 820 yards. There will be a sufficient fall from the reservoir by gravitation to supply the houses along the Sandgate-road and High-street to the sea front. The quantity of water now going into the tank is 20,000 gallons in twenty-four hours, but 12,000 more gallons will be supplied daily. The contract for the construction of the works has been carried out by Mr. E. R. Palmer, Wickham-road, Beckenham, Kent, at a cost of £870. The whole has been designed and personally superintended by Mr. Alec R. Stenning, F.R.I.B.A., Cannon-street, London. Mr. E. S. Wilks has acted as clerk of works.

Wirksworth Waterworks.—The Local Board of Wirksworth have called in Mr. W. H. Radford, C.E., of Nottingham, to report on the best method of increasing the supply of water. The springs supplying the present works have run down to 52,800 gallons per day; and the local board wish to obtain an increased supply of from 24,000 to 36,000 gallons a day.

The foundation-stone of a memorial church for the outlying district of Tonna, Neath, South Wales, was laid on the 6th inst. The building will be a cruciform one, with lofty tower and spire on the N.W. side, and a semicircular apse. The stone for the walls will be raised on the property, and the total cost will probably be about £3,000. The architect is Mr. E. H. Lingen Barker, of Hereford.

Mr. A. G. Greatorex, of the City Surveyor's office, Manchester, has been appointed Assistant Borough Surveyor of Southampton. Mr. Greatorex served his articles under Mr. J. Price, A.M.I.C.E., Engineer and Surveyor to the Toxteth Park Local Board, near Liverpool, and for the past four years has been hon. sec. of the Association of the Manchester Students of the Institution of Civil Engineers.

In our report of New Scotland Yard last week we stated incorrectly that the paving of the court-yard is being laid in granolitic pavement. We ought to have said that Messrs. W. B. Wilkinson and Co. have laid the whole of the concrete paving to courtyard, basement, and other floors, &c., throughout the building. They have also put up the principal staircases in their granite concrete, the whole being formed *in situ*, with solid close outer string, the same being moulded in Keene's cement, and with panelled soffite, and other work.

An action to recover damages for injuries sustained through the fall of a hoarding in Stoke Newington-road was tried on Saturday by Mr. Justice Smith and a jury. The plaintiff was Mrs. Fogden, a professional singer, and the defendant was Mr. T. Lewis, a builder, of Stoke Newington, who denied that there was any defect in the hoarding, and attributed the accident to a severe storm then raging. The jury awarded the plaintiff £273 damages.

STAINED GLASS.

BIRMINGHAM.—The great hall at the Victoria Assize Courts, designed by Messrs. Bell and Webb, has just been completed by the erection of the series of stained-glass windows, which, together with the effigy of the Queen over the porch, have been provided out of the £2,000 set aside from the local Jubilee fund. The windows are the work of Messrs. Heaton, Butler, and Bayne, of London, from designs by Mr. Lonsdale and Mr. P. H. Newman, who sought to illustrate local history and local industry. The windows are eight in number. A considerable portion of the glass has been filled with architectural ornament *en grisaille*, and the pictorial subjects have been restricted in size, so as to admit as much light as possible. The east window contains in the upper portions of the principal divisions full-length figures of William de Bermingham, Shakespeare, and Edward VI., while below them are similar portraits of Boulton, David Cox, and Priestley. In the lights at the side, and underneath the full-length figures, are medallion heads of other local worthies. The west window is devoted to the illustration of local industry. The six full-length figures are those of an armourer, a goldsmith, and a brassfounder, a smith, an electroplater, and an iron-caster, each represented in his working clothes. In the upper portions of the five front windows are allegorical figures, the centre one enthroned and those at the side standing. The centre window of the five depicts the Queen on her throne in 1837; while the north window opposite to it shows her Majesty in 1887. The lower portion of each of the four full-front windows have pictorial records, in three lights each, of the Queen opening Aston Hall; the Prince Consort laying the foundation-stone of the Midland Institute, the Queen performing a similar function for the Victoria Courts, where, among the portraits, that of Mr. Aston Webb is distinguishable, and, lastly, her Majesty's drive through Victoria Park.

EDINBURGH.—A series of six stained-glass memorial windows have just been completed for St. Andrew's parish church, by Messrs. J. Ballantine and Son, of Edinburgh. The windows occupy an oval wall space behind the pulpit. The four large windows represent the Four Evangelists, each exhibiting within a niche a standing life-sized figure of the Saint. Beneath the main subject is a lesser subject, giving one of the outstanding incidents in the life of the Saint. In the case of St. Matthew, this scene represents the Call of St. Matthew. In the case of St. Mark, Peter is represented being delivered from prison, and coming to the house of Mark. St. Luke is shown inditing epistles to St. Paul; and the scene beneath the figure of St. John is the Saint seeing the vision of the Holy City. The two smaller windows represent seated figures of David and Isaiah. The church being a building of Classic design, the windows have also been treated so as to harmonise with their surroundings.

STATUES, MEMORIALS, &c.

WORCESTER.—The formal unveiling of a Jubilee statue to the Queen took place on the 6th inst., in the space in front of the Shire Hall. The statue, which is the work of Mr. T. Brock, A.R.A., is of white Carrara marble, rather larger than life size, and stands on a plinth and pedesdal, also of white marble. Beneath are a sub-base, and the granite foundation, rising in three steps. The highest point of the statue stands 23ft. above the level of the ground in front of the Shire Hall. Her Majesty stands crowned and wearing a robe of State which falls to the ground behind, and is open from the neck downwards in front, showing the dress beneath. In her right hand the Queen holds the sceptre, and in her left she supports the orb. Resting against the plinth at her feet is a shield bearing the Royal arms, surmounted with a laurel wreath. On the front panel of the pedestal is an inscription. On the sub-base is the word "Progress," with a pair of wings; on the side panels of the pedestal are figures in bas-relief of boys representing "Art" and "Science." The panel at the back bears the arms of the county.

A new theatre, to be known as the Prince's, is about to be erected in Leake-road, Landport, from plans by Mr. Frank Matcham.

The Warwickshire County Council have appointed Mr. Francis Willmott and Mr. John Willmott, of Birmingham, and the survivor of them, surveyors of county roads, bridges, and buildings, at a salary of £1,050 per annum, which is to include all expenses of staff, travelling, and office and all other remuneration, except printing, and except a commission at the rate of 5 per cent. on any expenditure on every new work in one place in excess of £500 on any bridge or county buildings, in respect of which they may be employed as architects or engineers. £350 was voted to Mr. Willmott for extra services as county surveyor up to the 29th September last. It was also decided to appoint four assistant surveyors, at £150 a year each.

LEGAL INTELLIGENCE.

RE LOGAN AND SMITH.—A sitting for public examination, adjourned from the Aberystwith County Court, was held in this case at the London Bankruptcy Court on Monday. The bankrupts, W. G. Logan and Harriet E. Smith, were owners of slate quarries at Merioneth, Wales, carrying on business under the style of G. A. Walker and Co. Mr. Logan had also a separate business as an auditor and accountant at Surrey House, Victoria Embankment. He returned his separate liabilities at £90,096, of which £36,349 were unsecured, and assets £41,767. In the partnership affairs of G. A. Walker and Co., the accounts show gross liabilities £57,332, of which about £16,000 are unsecured, and an estimated surplus in assets of £39,305. An adjournment for further accounts was ordered till Wednesday, when another adjournment took place.

A WARNING TO SURETIES.—In the Southwark County Court on Friday, before His Honour Judge Holroyd, a case of considerable interest to builders and builder's merchants, was decided. The plaintiffs were Messrs. Eastwood, brick merchants, who claimed from the defendant, Mr. Hansell, architect, the sum of £15 for 7,000 stock bricks supplied to Messrs. Wood and Burrage, and for the payment of which sum the defendant became surety. A jury had been summoned, but at the last moment, by agreement between counsel, the case was left in the hands of the judge. Mr. D'Eyncourt, instructed by Messrs. Hugh, Davies and Co., appeared for the plaintiffs, and Mr. Edwards, instructed by Mr. Alpe, for the defendant. The case for the plaintiffs was that prior to February last they had been supplying Messrs. Wood and Burrage with bricks for some houses they were erecting for defendant at Sunbury. More goods were required, which they were not prepared to supply for credit to that firm. In consequence, Mr. Hansell, the defendant, wrote to plaintiffs a letter, which was put in, asking them to supply the 7,000 bricks ordered, and consenting to himself being liable for payment one month after delivery if Messrs. Wood and Burrage had not settled with plaintiffs in the mean time. At the end of the letter was a request that plaintiffs would supply him with a copy of the invoice. Messrs. Wood and Burrage did not pay plaintiffs for the bricks, which were duly supplied, and plaintiffs in June wrote to defendant informing him of this fact, and demanding payment from him. Defendant replied that he did not remember becoming surety, and asked for a copy of his letter to plaintiffs. This was supplied, and defendant's solicitors afterwards wrote to plaintiffs denying liability on the ground that their client had never been supplied with a copy of the invoice for the goods as required in the letter he sent to plaintiffs on becoming surety; hence the present action. For the defence, it was urged that as in the letter defendants sent to plaintiffs there was a request that a copy of the invoice for the bricks should be sent him, the sending of such copy was one of the conditions on which he became surety. Plaintiffs, it was admitted, never did send him an invoice, and, in fact, he had no knowledge that the goods were not paid for till June, at which time he had settled with Wood and Burrage for their work. Plaintiffs' failure to comply with the terms of his letter had deprived defendant of the opportunity of deducting the amount for which he became surety from the builders' account, and therefore he was not liable. His Honour, in summing up, pointed out that the request for an invoice in the letters sent by defendant to plaintiffs was not made by him a condition on which he became surety. If he had desired to make the sending of the invoice a condition, he could easily have so worded his letter. With regard to the contention that defendant had settled with his builders before he knew that the 7,000 bricks were unpaid for, it was not His Honour's experience of business men to come to such settlements without inquiring first how they stood with regard to money for which they had made themselves liable. He gave judgment for plaintiffs, with costs.

IN RE PLUCKROSE AND OLDREY.—The debtors, who were builders and contractors carrying on business at Westbourne-park and Kensal-road, under the style of William Oldrey and Co., have passed their examination. In November, 1888, a building on which they were engaged collapsed, several workman being killed and others injured. Actions for the recovery of damages were afterwards commenced, and one of them, which was treated as a test action, resulted adversely to the debtors. To these circumstances they attributed their failure. The receiving order was made in July last, and the statement of affairs showed liabilities £12,793, of which £4,702 will probably rank, with a surplus in assets, subject to realisation.

The new police-court for Wandsworth will be built by Messrs. J. Mowlem and Co., their tender having been accepted at £13,574.

The session of the Surveyors' Institution was inaugurated on Monday evening by an address from the President, Mr. Driver.

Our Office Table.

WHILE the members of the Art Congress were protesting in the Council Chamber at Birmingham on Thursday last against the unsightliness of sky signs, the gale was demonstrating the danger of that modern advertising medium, for during the day four of the letters used by Messrs. Harris and Sheldon, shopfitters, for their sky sign in Stafford-street became detached, and fell into the roadway below. The sign was fixed 74ft. above the building, and at a total height of 120ft. from the street. The letters were composed of wood, iron bound; measured 6ft. in height and weighed about 30lb. each. The letters were suspended on a galvanised iron frame, which was rendered extra strong by a large number of guide-ropes of stranded wire. The letters swung in gun-metal bearings, attached to a substantial iron crossbar, and withstood the strain during the earlier part of the morning. When the gale however, was at its height, attention was called to the fact that the initial letter "H" was only suspended by one bearing, and that in consequence it was being blown against the other letters of the word. An employé tried to lash the letter to one of the bars of the framework, but his efforts were only partially successful, and shortly afterwards three of the letters fell. No one was hurt, but one of the letters struck a portion of an old sign-frame, and rebounded on to the roof of some houses that join the manufactory, smashing the tiles. A superintendent of police, fearing that the other letters might come down in a similar fashions, sent for Mr. Till, the borough surveyor, who ordered the street to be barricaded against traffic, and also gave instructions that the sign was to be removed as soon as the weather permitted. We are glad to see that the London County Council will seek power next session to regulate or prohibit the erection in the Metropolis of these disfiguring and threatening signs.

THE death is announced of Mr. James Platt Holden, one of the oldest architects and surveyors in Manchester. Mr. Holden, who was 84 years of age, served his time as a journeyman bricksetter, and emigrated to the United States, where he first worked as journeyman, then as builder, and ultimately as architect and surveyor. Returning to England, he entered into partnership as an architect with his brother Isaac in Manchester from 1838 to 1852, when they separated by mutual consent, each continuing on his own account. Mr. Isaac Holden died six years ago. Mr. James P. Holden held the office of surveyor to the Dean and Chapter for 38 years, and of architect to the cathedral for about 28 years, during which time a considerable portion of the fabric was restored and the tower rebuilt. He retired from practice in 1879.

THE opening meeting of the 137th session of the Society of Arts will be held on Wednesday evening next, when an address will be delivered by the Attorney-General, the Chairman of the Council. Among the papers to be read during the session are "The Chicago Exhibition, 1893," by Mr. James Dredge; "Methods and Processes of the Ordnance Survey," by Col. Sir Charles Wilson; "Electric-Lighting Progress in London," by Mr. F. Bailey; "Sgraffito," by Mr. Heywood Sumner; "Glass-Painting," by Mr. H. Arthur Kennedy; and "Illustrated Journalism," by Mr. Carmichael Thomas. A course of four Cantor lectures on "The Decorative Treatment of Natural Foliage" will be delivered by Mr. Hugh Stannus on the evenings of April 13, 20, and 27, and May 4.

MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Royal Institute of British Architects. Business Meeting. 8 p.m.

TUESDAY.—Institution of Civil Engineers. Discussion on "Steam on Common Roads." Paper on "The Vibratory Movements of Locomotives," by J. Milne, F.R.S., and J. McDonald. 8 p.m.
Manchester Architectural Association. "A Three Months' Tour in Belgium and Northern France," by P. E. Barker. 7.30 p.m.
Leeds and Yorkshire Architectural Society. Inaugural Address by the President, W. H. Thorp. 8 p.m.
Glasgow Architectural Association. "Art in Our Homes," by T. Robertson. 8 p.m.

WEDNESDAY.—Society of Arts. Opening Address by the Attorney-General, M.P. 8 p.m.
British Archæological Association. "Ancient Coped Stones in Cornwall," by A. J. Langdon. 8 p.m.



Wm J. Anderson

W·J·ANDERSON·
PRESIDENT·OF·THE·GLASGOW·ARCHITECTURAL·ASSOCIATION·



E·P·LO
ARCHITEC

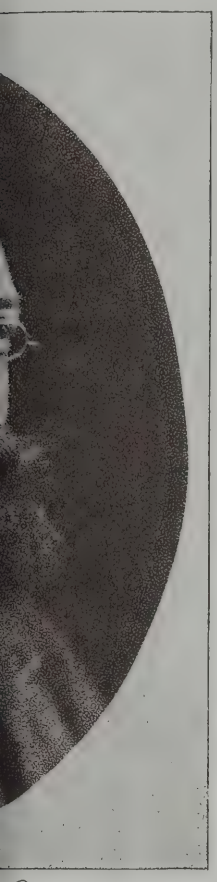


Frederick Wm Stevens

F·W·STEVENS·F·R·I·B·A·
ARCHITECT·OF·THE·G·I·P·RAILWAY·VICTORIA·TERMINAL·BUILDINGS·BOMBAY·



F·H
COUNTY



Loftus Brock

K·F·S·A·
FUGES·



Francis T. Dollman

F·T·DOLLMAN·A·R·I·B·A·
AUTHOR·OF·"AN·ANALYSIS·OF·
ANCIENT·DOMESTIC·ARCHITECTURE·IN·GREAT·BRITAIN"



B·A·
EX·



E. M. Bruce Vaughan

E·M·BRUCE·VAUGHAN·A·R·I·B·A·
ARCHITECT·OF·WELSH·CHURCH·AT·CARDIFF·

"ASHENDENE" BAYFORD · HERTFORD ·

THE · GARDEN · FRONT · J · H · WALLIS · ARCHT





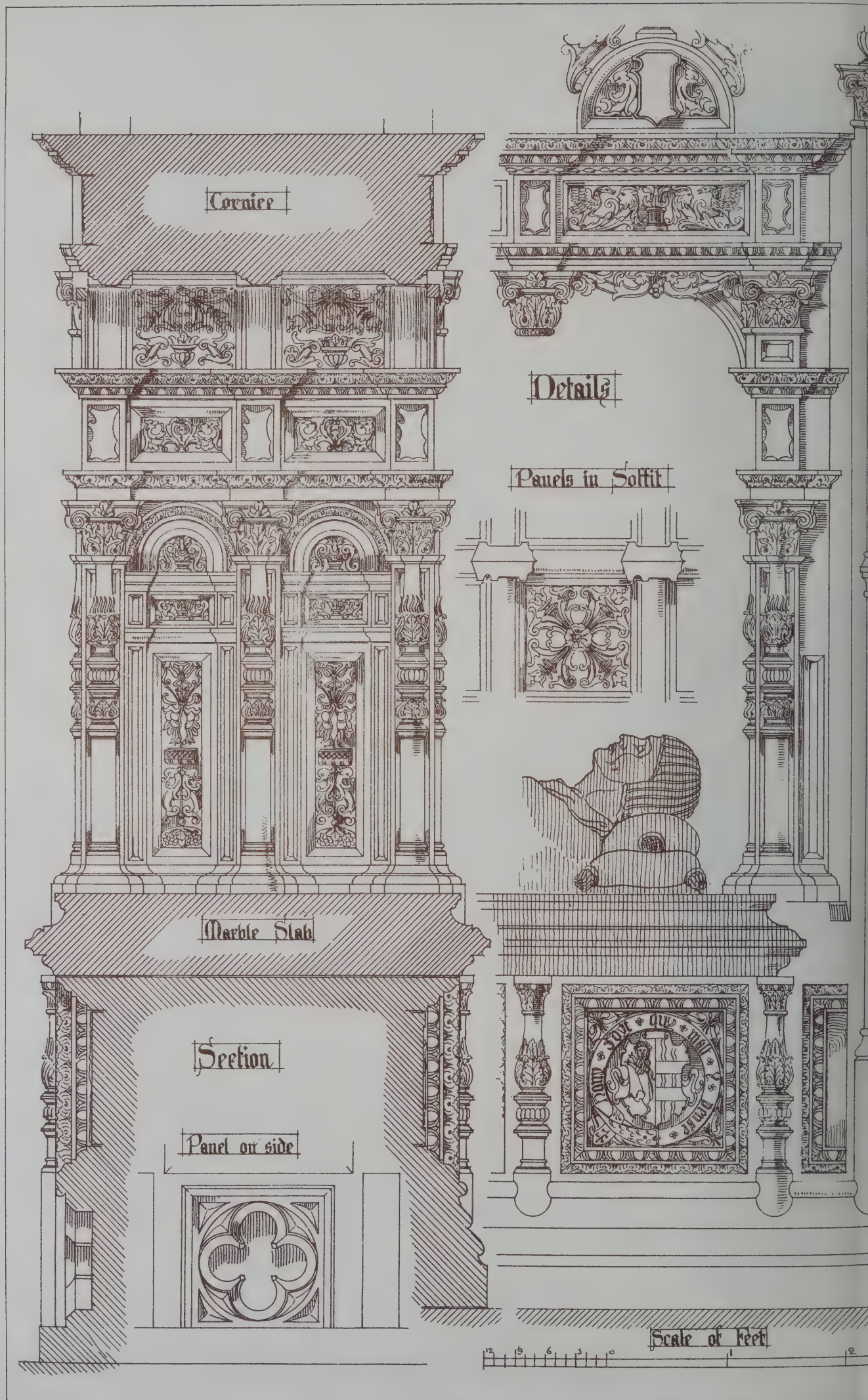
Photo-Lithographed & Printed by James Akerman, 6, Queen Square, W.C

ST JUDE'S CHURCH · HALIFAX.

W. SWINDEN BARBER · ARCHT



Photo-Lithographed & Printed by James Akerman 6 Queen Square, W.C.


Cornice
Marble Slab
Section
Panel on side
Details
Panels in Soffit
Scale of Feet

Marney Monuments

Layer Marney Church Essex

FROM Mr FRED. CHANCELLOR'S ANCIENT SEPULCHRAL MONUMENTS OF ESSEX.

nts above
side are
g on S
perfect

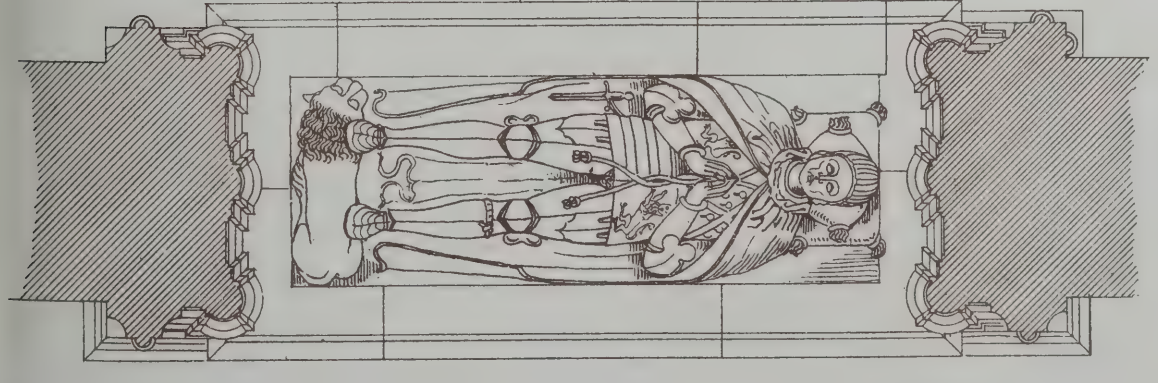


A

The Monument is
Terra Cotta
The Figure and Slab
Black Marble

Chancel Floor

orth Side of Monument



Plan at A

Scale of Feet.



JOHN SHEWELL CORDER DEL

Photo Lithographed & Printed by James Akerman, 6 Queen Square, W.C.



COTTAGE AT HIGHAM · COLCHESTER · W.H. ATKIN BERRY ARCHT



"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

THE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LIX.—No. 1872.
FRIDAY, NOVEMBER 21, 1890.

EVELOPMENTS OF CONSTRUCTION.

THE leading addresses given before members of the various architectural cieties have all dwelt upon the one subject professional education and examination. r. Leonard Stokes, in his comprehensive ldress, spoke of the importance of providing chitectural teaching, which he thought the ssociation ought to do. Mr. Alfred Water-use, in his able address at the Institute, scussed the same subject in a thorough siness-like manner. Mr. Robert Walker, esident of the Society of Architects, has id before its members some good answers the opponents to Registration. Several ovincial societies have been discussing ndred subjects. The profession have mainly keep pace with what is going on outside eir own domain. The progress and de-lopment of electricity in its numerous plications, the labours and results of perimentalists and scientists with re-ect to materials, the improvements going in structural types and details, are estions that call for immediate attention the part of architects. It is not sufficient w, as it was fifty years ago, to cast an different eye on inventions, and to repose the quieting thought that architecture nnot change if we are only true to the ditions of the past, and that one who serves the canons of Classic proportion d knows how to build need not trouble nself about any branches of science out-e his own sphere. The rules of Vitruvius d the principles of Mediæval art were no ubt considered in those days the only alifications an architect ought to have, in dition to his knowledge of the building des. The two former will remain for all ne, and embody the dogmatic creed of the ; but the capacities of design have been larged to a degree which the architect fifty years ago could never have con-nplated; that is to say, design in the stract has been extended to purposes l materials that were unknown half a tury ago. Not only has a wider application the principles of design taken place, but extension of the trades and crafts of lding. Some trades more than others re been completely revolutionised—such the trades of the founder, smith, and nmonger; those like the mason and cklayer and plasterer have not altered ch. Let us note, for example, the struc-al developments of iron, to what a variety different purposes it is now applied; how it changed building construction in such ngs as roofs and floors. The literature of n construction forms an entirely new nch of the architect's education; yet it is in which he trusts largely to the engineer. rms of trussing columns, girders, roofs, and rs are so numerous and varied that very few e entered further than the threshold of the ject. The chemistry of iron and steel is a y large subject in itself, and can only be stered by experts in its manufacture. at the architect wants to know are the ults of experiments, the effects of mical and mechanical action, and how d wrought-iron and steel may be made to st vibratory shocks or suddenly applied ins. The superiority of old-fashioned to steel for structural uses has been ntained by some; carbon confers greater dness and resistance to steady tensile in, besides adding to the homogeneous lity of the iron. The modes of annealing , the softening and toughening it, have not yet been clearly demonstrated, though it has been proved that bars immersed in boiling water bear a greater bending test than when cooled slowly in the ordinary manner. All these points require a larger and more extended experience. Beyond this kind of information respecting the qualities of iron, the question of protecting it has not been answered satisfactorily. Paints and varnishes, bitumen, electro or chemical deposition of metals, coating with lead, the Bower-Barff process, and other methods are used; but the architect requires to know which is the best. Scientific men tell us that the linoleine or linseed oil is the most valuable part in oil-paint protection; it combines with oxygen and expands, is adhesive and impervious to water, and difficult of solution—all valuable properties for a protecting film; that in varnishes the medium is volatile, and as it evaporates the varnish and coating shrink; but both paint and varnish are subject to the undermining action of iron rust, and even the linoleine film ultimately peels off. A solution of pitch or asphalte makes a very good adhesive film for iron; but it is soluble in water, and the film is gradually removed. The attempts to protect iron by electro-deposition have failed, as the copper peels off, so that they cannot be relied upon. We know the merits of tinning and galvanising. In this one branch of knowledge the architect has yet to learn much by his own experience as to which is the most desirable kind of protection. Chemical research will alone solve the question how to protect large surfaces of iron. For small decorative work, the film of magnetic oxide produced by the Barff plan is of undoubted value.

But it is chiefly outside the domain of building that the revolution in methods and manufacture has most affected architecture. Scientific discoveries have very materially altered the modes of construction. The architect's specification must now take recognition of inventions, and patented materials and fittings; he is required to know every new and improved material, what the ever-extending discoveries have added to his stores. To one or two of these external influences on architectural development we may refer. The application of science to practical wants has been a great cause of development. A few years ago sciences were taught without any reference to things; all was theory, and *applied* science was unknown. The teaching in our science and technical schools has mainly been to give prominence to the application of principles to various arts. Chemistry is now taught in reference to such matters as the composition of rocks, limestones, gas manufacture and lighting, the physical properties of stone and metal; mechanics is no longer merely a collection of theorems and mathematical demonstrations, but is applied to a variety of practical questions bearing on construction, while other branches of physics have practical reference to the construction of the hydraulic engineer—to chimneys, the acoustics of public buildings, the effect of heat on materials, and later branches of physics, like electricity, have been chiefly directed to the requirements of lighting and locomotion.

The result of all this has been that the art of construction has greatly enlarged its boundaries; that it is no longer gauged by such treatises as Nicholson's, but that it has extended beyond bricks and mortar, carpentry and joinery; includes within its domain the scientific arrangement of materials, how they should be combined to produce the desired results; the principles of sanitary building, fireproof arrangements, acoustical principles of building, and the scientific evolution of forms best adapted for every class of structure—in a word, the application of modern science to architecture. Look, for example, how the sciences of sanitation and hygiene have changed the plan and construction of hospitals and infirmaries. The pavilion is an embodiment of a scientific conception in which isolation, sunlight, and air are essential. So, too, science has dictated the form and construction of details, even down to drain-traps and intercepting chambers. The construction of dwellings for the poor, schools, and libraries, have been materially modified during the last quarter of a century. Legislation has enforced rules and regulations respecting the building of workhouses and infirmaries, places for public resort, and theatres. But, apart from sanitary and official regulations, science has been shaping and modifying architectural design; the form of an auditorium is now a matter controlled by acoustics and vision; in the construction of galleries, roofs, and boxes science has taught how they ought to be formed, and in what material to resist fire, and the number of entrances and exits, passages, and staircases have to obey a law almost as certain as that of hydraulics.

Materials about which little was known a few years ago have considerably affected the design of details. Two of them are worth notice—concrete and asbestos. The former by itself or in connection with iron has materially extended construction in nearly every branch, and has called for a special knowledge of both. Considerable ingenuity has been called for, as the numberless patented and other improvements in floors, roofs, staircases, and details testify. These materials have created quite a new treatment or idea, unlike anything in timber, stone, or other material, and we have yet far from reached the possible combinations of concrete and iron. Another material—a mineral—has of late forced its way into notice by the valuable properties it possesses as a useful boiler and pipe packing, as a valuable fire-resisting material, and as a non-conductor of heat and sound. The fine and tenacious fibres of Italian and Canadian asbestos are now applied to a large variety of uses, not only as a packing for boilers and pipes, but for structural purposes as a non-transmitter of heat and sound, and therefore valuable for partitions, floor and roof construction. This property of asbestos has been utilised in various ways. In New York and elsewhere buildings for cold storage of meat and provisions, with double walls having asbestos as a filling, are erected. As a covering, or as a paint, to render wood uninflammable, the material is extensively used, and Bell's Aquol paint is not only a fire-resisting, non-conducting, impervious paint, but can be used for decorative painting, and is susceptible of very delicate treatment. We believe that, as a covering for woodwork, asbestos has a future which architects must recognise, and we shall probably see before long moulded casings of the material for iron and wood columns, girders, and floors. It possesses great tensile strength, and so can be employed in situations exposed to strains or shocks. It is capable of being used for composition mouldings and decoration, for stove pipes of moulded shape and of great lightness. As it can be woven or applied in moulded forms, it is adaptable to almost any architectural purpose.

For ceilings asbestos seems capable of a very extended application, as it can be moulded to represent panels and painted decoratively. As a woven fabric it is useful for walls. "Slag wool," or silicate cotton, is another material having many of the valuable properties of asbestos as a non-conductor of heat and cold and fire-resisting agent, extremely light, and a valuable deafener of sound. Floors, roofs, and walls are now fitted with slabs of this material. Wire netting and plastering of silicate cotton and plaster are also largely employed in the States; so before long we may anticipate that, by improvement of manufacture, the material will enter more largely than it now

does into the construction of walls, floors, and roofs, and that it may even become a substitute for woodwork to some extent. These are only a few instances of how competing forms, structures, and materials are, by a process of extinction and survival of the fittest, making a new development of architecture possible.

OWNERSHIP OF PARTY-WALLS.

THE frequent inquiries made respecting the ownership of party-walls, and the questions constantly arising between building and adjoining owners, show the great uncertainty existing as to such matters. Professional men are called upon to advise their clients; but very often their experience does not enable them to give any reliable advice; and it must be confessed the law itself is not very explicit as to what a party-wall is, though the four definitions given by Judge Fry are the most scientific, and are now generally accepted. The question that most concerns the owner of house property divided by party-walls from his neighbour is, what rights he has in the case of any proposed alteration, repair, or raising which one of them may desire to make. Generally very few owners know anything about how the houses have been built. When a man purchases or takes a house on lease, one of the last points that occur to him is that of his rights in the party-walls, or whether any express agreement exists or not. Very seldom indeed anything of the kind does exist, though it would be most desirable if purchasers or builders made inquiries on the question of the party-walls, and their legal advisers insisted upon some evidence or conveyance granting or reserving the right. We will suppose the most ordinary case, that which Mr. Justice Fry places first, where the party-wall is the "property in common" of the adjoining owners. In this instance there is nothing to show on whose land or in what manner the wall was built, the only evidence being what lawyers term "evidence of common user." This evidence is important to be adduced. We have very often to give advice to a correspondent under circumstances such as these. A. and B. are adjoining owners, A. thinks of raising his wall or making some alteration to his house, and claims the wall as his private property. He has always considered the wall as his own. B. claims also a right, and denies to A. the right of making any alteration. It is not difficult under these circumstances to prove a "common user," and this evidence is sufficient for a jury to say such a structure is a party-wall. Or, we may imagine B. to pull down his house and rebuild it, using A.'s side wall as a party-wall. A. thereupon brings an action, alleging that the wall is his, and was a distinct wall on his own side. In such a contention evidence is required to prove that A.'s wall was separate and was built on his own land; if this cannot be shown, it is presumed by evidence of common user that the wall is a party-wall and the owners hold the property in common. Such a case was that of "Wiltshire v. Sidford," a precedent generally quoted in legal textbooks. If an adjoining owner pulls down his house, and there is no evidence to prove that it had a distinct side wall, it is difficult for the adjacent owner to claim a sole right to the wall which adjoins him, or to prevent his neighbour from using it to support his structure. Therefore one very necessary point, when an owner contemplates rebuilding of his premises, is for his neighbour to ascertain if there are two walls or only one. An architect or a surveyor will be able to ascertain this in some cases where the party-wall is carried through the roof; but in localities where there are no by-laws in force, and in old houses, the only way to ascertain this is to make a very careful plan on accurate dimensions of the party-wall between the two houses, so that the adjoining owner may know whether he has any right to interfere or raise any objection to the rebuilding. If there are two private walls between the adjoining houses, or, in other words, if the divisional wall is divided longitudinally into two strips or halves (the second variety of party-wall described by Mr. Justice Fry), such a division is not properly a party-wall; but the owner of each half has a right to do as he likes with his own. He can take down his half, even if the wall has no joint and is bonded through; or he can raise it, or build upon or against it as he pleases. But this rule may lead to encroachment. Now, in the raising or rebuilding of old premises, there is a risk of overlooking the exact circumstances. The owner of one house, A., takes down his house, and rebuilds it. B., his neighbour, does not trouble to make inquiries as to the nature of the wall—whether it is a dividing wall, half on A.'s land and half on his own, built originally at the joint expense of their predecessors, or a simple party-wall having common rights. It is possible that A. may take down his half, and utilise the space it stands on up to B's wall, using the said wall as a party-wall for his new premises, and thus adding to the width of his building. B., of course, would have a good ground for complaint at such an encroachment, but may never find out the real facts of the case. We have known old premises rebuilt and increased in width in this way. Imagine a thick wall built jointly at the expense of two owners on each other's land. It is 14in., or two bricks thick. The owner A. on one side makes alterations and cuts off his half of the wall, but does not interfere with the other owner's part, B. The question occurs, Has B. a ground of complaint, or can he bring an action against A. for making use of his wall as a party-wall? Certainly; for such a use of the wall would make it in time the property in common of the adjoining owners. There would be an obvious injustice in such a proceeding. Yet there is nothing to prevent it if B. looks on passively and does not guard his rights by taking a course open to him, and we have ground for believing that very often advantage is taken of thick walls built in this manner. We may suppose a further case. A. wishes to build an additional story, and raises the division wall, or walls, the whole thickness—a very frequent case. He may do this with the very best of intentions, and to prevent damp from coming through the exposed portion of the wall above the roof of his neighbour. But B. is entitled, if he so desires, to pull down the half so raised on his own moiety.

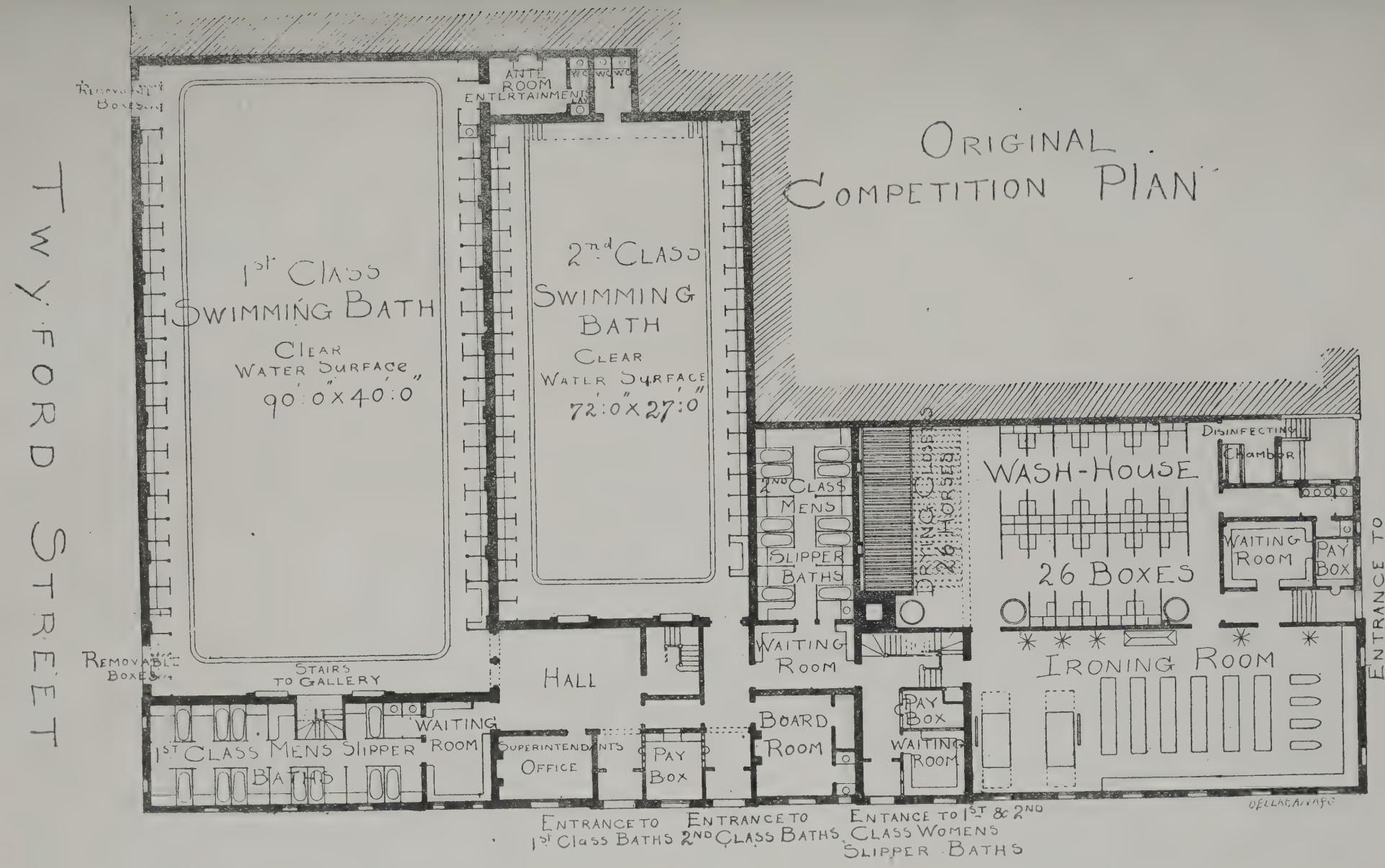
There is a third case in which the party-wall belongs entirely to one of the adjoining owners, say to A.—that is to say, the wall is built on his own land. B., the adjoining owner, has a right acquired of using the wall as a party-wall. In other words, it is subject to an easement, and A. could not pull it down, or deprive B. of its use. But this is not so common as the descriptions previously given. In building houses the party-wall is generally built equally on the land of adjoining owners—it belongs in common to them. Each party is entitled to a full enjoyment of the wall in every part, so that if one owner raises a portion of the wall or fence wall, the other is justified in pulling it down, as no action for trespass can lie against a joint owner. We often hear of an owner rebuilding a party-wall, or raising it for his own convenience, giving much offence and annoyance to his neighbour. The remedy the neighbour has is against the raising, and by law (see case of Cubitt v. Porter) he is justified in pulling the wall down to the original level. Sometimes an owner will take upon himself to pull down a joint wall of this description, and rebuild it higher so as to place a lean-to roof against it, which covers the top of the wall. This, in the case of "Stedman and Smith" was held to be sufficient evidence to justify a jury in finding ouster of the plaintiff, and enable him to sustain an action of trespass a the ousted tenant in common. It is not, therefore, so easy to tamper with a wall of this description, though with the sanction of the adjoining owner, a story can be raised if the wall is sufficient t bear the increased weight. We often see houses raised in this manner. The adjoining neighbour is the sufferer in many cases, and it rests with him to see that the raised wal does not obstruct or injure his property Raising the party-walls of a house may no be so objectionable as adding to the heigh of a garden wall in the manner jus described.

Of course, the rights of owners can b made a subject of agreement, as by a instrument defining those rights. In lease covenants are sometimes inserted, providing that the lessee is to build walls or fence adjoining other plots, which are to be deeme party-walls or fences, and if these proviso are inserted, as they always should be very little dispute or disagreement i likely to arise between the owners o adjoining houses. Any of the kind of party-walls described can be created b express agreement. Thus when an owne claims under a conveyance that the yar walls of his house are to be party-walls, an his neighbour holds under a similar covenant the walls dividing their yard or grounds be long to them as owners in common, an neither of them has any right to raise th wall between them. It may be also o importance to remark that there is n obligation legally on either owner to repai a party-wall of either kind, and if one repai he cannot claim any share of the cost fro his neighbour. The effect of this law certainly detrimental to property, and w see its effects in the very dilapidated stat of party-walls generally. However, the la does not prevent one or the other of th owners from repairing; either of them entitled to do so, and also to rebuild necessary. The statutory rules as to th subject, as those under the Metropolita Building Acts, impose distinct obligations a to party structures to which it is unnecessar to refer.

PUBLIC BATHS AND WASH-HOUSE ST. MARY'S, ISLINGTON.

[WITH PHOTO-LITHOGRAPHIC ILLUSTRATIONS.]

WE publish to-day the perspective view a key plans of the design selected by the co missioners in the recent competition. The author Mr. A. Hessell Tiltman, F.R.I.B.A., of 70, To rington-square, London, who supplies the follo ing particulars:—Swimming-baths, respectivel 90ft. by 40ft. and 73ft. by 27ft., together wi 11 first-class men's slipper baths, 10 second-cla men's slipper baths, and 12 first and seco women's private baths (accommodated on t first floor). A public wash-house, having washing-boxes, with a like number of dryin horses; ironing-room, a disinfecting cham (for the destruction of vermin in the clothi only), and the requisite waiting, cloak-roo lavatory, &c. The establishment laundry a the boilers, &c., for heating, are the o portions of the establishment accommodated the basement. It should be stated that pay-box has been omitted, and the e trance to the wash-house placed alongside the women's entrance in the Caledonian-roa in accordance with the suggestion of the assess and as the key plans upon the perspective sh show the original competition ground-plan a the amended plan, it will be seen that no mate alterations have been made. In our correspo ence column of to-day Mr. Tiltman has sa factorily explained that the discrepancy, poin out by two of our correspondents in our issue, as to the width of the second-class ba was a purely clerical one.


ORIGINAL COMPETITION PLAN
TWYFORD STREET
STANMORE STREET
CALEDONIAN ROAD
1st Class Swimming Bath
Clear Water Surface
90:0 x 40:0
2nd Class Swimming Bath
Clear Water Surface
72:0 x 27:0
Ante Room Entertainment
W.C. W.C. W.C.
Removable Boxes
Removable Boxes
Stairs to Gallery
Hall
1st Class Mens Slipper Baths
Waiting Room
Superintendants Office
Pay Box
Board Room
2nd Class Mens Slipper Baths
Waiting Room
Drying Closets
26 Horses
Wash-House
26 Boxes
Disinfecting Chamber
Waiting Room
Pay Box
Ironing Room
Pay Box
Waiting Room
Entrance to Wash-House
Entrance to 1st Class Baths
Entrance to 2nd Class Baths
Entance to 1st & 2nd Class Womens Slipper Baths

THE ARCHITECTURAL ASSOCIATION.

THE third ordinary meeting for the present session took place on Friday evening, the President, Mr. Leonard Stokes, in the chair. The following new members were elected:—T. D. Adshead, R. G. Rendle, E. White, C. C. Brewer, P. P. Cotton, C. E. Sadler, K. M. Vining, F. Thompson, W. Maclelland, F. H. Willis, F. Taylor, G. Lucas, G. E. Martin, and H. Legg. Mr. C. H. Brodie called attention to the passages in the address of Mr. Waterhouse, as President of the Royal Institute of British Architects, suggesting that a closer relationship might subsist between the Institute and the Association, and asked if the A.A. committee had as yet taken any steps in the matter. The President replied that at present the committee had not given the question any consideration.

THE LAST FOUR A.A. EXCURSIONS.

Under the title of "The Work of the Hon. Amateur Photographer," an amusing and instructive lecturette was delivered by Mr. John L. Robinson, A.R.H.A., of Dublin, as a running commentary upon an exhibition of oxy-hydrogen lantern-slides of some three hundred photographs taken by himself during the summer excursions of the Association in 1887-8-9-90. We have each year* described these views, which depict the buildings visited from the standpoint adopted by an architect skilled in the use of the pencil and quick to select piquant or characteristic "bits," and, as in former years, reproduce to-day as samples four photographs, illustrating the excursion to Oxford and neighbourhood last August. At the outset Mr. Robinson alarmed the members by the innocent remark that he had proposed to bring before them over six hundred slides, which, with a minute or so's comment on each, would occupy, it would be seen by an easy calculation, a good evening. He explained, however, that he had reduced the number of views by more than one-half, and should similarly cut down his comments thereon. Beginning his illustration of the Wilts and Somerset excursion with the west front of Bath Abbey, the lecturer showed the views of Great Chatfield Manor House, the cloisters at Lacock Abbey, Steeple Aston Church, to which a chancel has been added by Mr. Henry Chalton, and a corner of the George Inn at Norton St. Philip—all four reproduced in our issue of Sept. 30, 1887—and proceeded to exhibit the old bridge at Bradford-on-Avon, with its chapel or lock-up, the cruciform church at Edington, and the Hungerford Almshouses at Corsham. The Matlock excursion of 1888 was represented, among other views, by Lichfield Cathedral (reproduced in our pages at the time), many of Haddon Hall, Ashbourne Church, the chimneypieces at Bolsover Castle, Lord Vernon's seat at Sudbury, South Wingfield Manor House, and John Thorpe's *chef d'œuvre*, Wollaton House, near Nottingham—a building which had little merit in the lecturer's eye. The King's Lynn excursion was recalled by a number of fine photographs of the immense Marshland churches; the Custom-house, town-hall, and St. Margaret's Church at Lynn; the 13th-century church at West Walton, with its detached tower; Castle Acre Priory and the Littlebury Tomb at Holbeach (both reproduced in the Building News for Oct. 25, 1889); Oxburgh Hall and Church, Walpole St. Peter's, Tilney All Saints', and the churches at Wiggenhall, the series closing with Ely and Peterborough Cathedrals. Of the excursion of last August, the colleges and churches of Oxford furnished a large proportion of the views. Wadham, New, Magdalen, and St. John's Colleges were fully illustrated, as was the High-street and Iffley Church. Mr. Robinson's photograph of the north aisle and well-proportioned tower and spire of the church of St. Mary the Virgin, which is reproduced at the top left-hand corner of our photo-lithographic sheet, was taken, he explained, four years since, before the twisted pillars of the famous Italian porch, added by Archbishop Laud's chaplain, were concealed as at present by wreaths of Virginian creeper. The church is a noble specimen of Perpendicular work, having been rebuilt in 1488 by Sir Reginald Bray, and is the subject of one of Sir Gilbert Scott's restorations. The noble pinnacled tower and south transept of the chapel of Merton College (forming the upper right-hand view on our photo-lithographic plate) is a portion of a former parish church, dedicated to St. John, the nave of which has been destroyed. The chapel consists of choir, transepts, ante-chancel, and central tower, rebuilt about 1440, and was restored by Blore in 1838, and again by Mr. Butterfield in more recent years. Below, to the left, we give an interior view in Christ Church Cathedral, looking from the Lady or Latin Chapel, the outer of the three north aisles, to the choir. The pulpit in this chapel was illustrated by a drawing by Mr. Thomas MacLaren in our issue of Aug. 22nd last, and the groined vaulting to nave in the following number. The last view we have re-reproduced is the interior of Minster Lovell Church, remarkable on account of the central tower, which on plan is smaller than the space formed at the intersection of the cross, while the chancel is narrower than the nave. Four piers, two entirely detached and two partially engaged, support the tower inside the main walls, with which they are connected by a small, diagonally-set arch, in each case forming four hagioscopes between the nave, transepts, and choir. The central space is groined. The church was restored by Mr. J. L. Pearson, R.A., who added the pulpit and reredos seen in the background of our view. A sketch of the exterior of the church, with plan, was given by us from Mr. Pite's drawings in the Building News for August 15th of this year. The church and Abbot's kitchen at Stanton Harcourt, the quaint little church at Coggs, that at Asthall, and Burford manor-house and church, all illustrated by us in the issue just mentioned, were also shown and described by Mr. Robinson. The great parish church of Witney, the tower and lofty spire of Kidlington, Ewelme school, almshouses, and church, and Water Eaton manor-house were also illustrated. Dorchester Abbey, with its famous Jesse window in the north side of sanctuary, formed the subject of several plates, including one of the leaden font, to which a perfectly plain cylindrical base has been added, from Mr. W. Butterfield's designs, on which—as Mr. Robinson remarked—"not much detail was wasted." (See illustration in our issue of August 15th last, p. 209, and other details of the church in the same number.) The series closed with some views from Evesham and Stratford-on-Avon. In conclusion, Mr. Robinson said these excursions were of great value to the members who took part in them, and he could name several members whose talents in rapidly picking out and sketching the best parts of buildings had been greatly developed during the weeks thus spent in successive years, while their powers of draughtsmanship had been greatly improved at the same time. He trusted that the next excursion would be attended by larger numbers than was that of this year, especially by the younger men.

Mr. H. O. Cresswell proposed a vote of thanks to Mr. Robinson.

Mr. H. L. Florence seconded the motion.

Mr. R. Elsey Smith and Mr. Maurice B. Adams having spoken, the President, in putting the vote, remarked that Mr. Robinson was by no means the "simple showman" that he had claimed to be, but was well qualified to act as their leader, and was a real benefactor to the Association.

Mr. Robinson briefly acknowledged the vote of thanks, which was carried by acclamation.

* See the Building News for September 30, 1887, p. 527 (Wiltshire excursion); for September 28, 1888, p. 422 (Matlock); for September 27, 1889, p. 414 (King's Lynn); and for September 26, 1890, p. 450, current volume (Oxfordshire).

THE SURVEYORS' INSTITUTION.

THE inaugural meeting of the present session of the Surveyors' Institution was delivered on the 10th inst. by Mr. Robert Collier Driver, the President. In his opening remarks he lamented the growing tendency to invasion of what had been thought to be established amenities of property, and instanced as illustrations of the aggressive tendency of the age the Tenancies Rating Bill of last session, which proposed a forced division of the rates between landlord and tenant, and the Agricultural Tenants' Improvements Bill for giving tenants' claims for compensation priority over the claims of mortgagees. As to the Strand Improvement Bill, the President pointed out that its proposals were not so fortunate as to attract the supporting evidence of a single practising surveyor, and in the result the so-called "Betterment" clauses failed to approve themselves to Parliament. The President continued: The Public Health Acts Amendment Act contains some important conditions relating to drain-connections and made-up sites, to which members of this institution practising outside London will do well to give attention. One of the most important Acts, from a surveyor's point of view, is what is known as the General Powers Act of the London County Council, which received the Royal Assent on the 18th of August. The sections of this Act which specially concern us as surveyors are the 27th to 30th, 32nd, 33rd, 35th, and 36th. The council of the institution urged that as regards section 27 the sittings of the tribunal for the approval of plans should be continuous throughout the year, and that the points objected to and the reasons of adverse decisions should be stated; but their representations as regards this point did not commend themselves. As regards section 28, which concerns the fixing of the general line of buildings by the superintending architect of the County Council, it had long been felt to be a grievance that no right of appeal existed against a decision which might prejudicially affect valuable building sites; therefore it speaks well for the London County Council that a tribunal of appeal has been voluntarily conceded. The council of the institution were not of opinion that it was desirable to fix a new limit for the cubical contents of buildings in place of the 216,000ft. prescribed by the Building Act of 1855. Although the limit has now been extended to 450,000c.ft., the concession is guarded in the Act by conditions which remove some of the objections which the council entertained to the proposal. It was felt very strongly that the original proposals of what is now section 33 of the Act might result in serious injury and loss to the owners of corner plots. There was no objection to the proposal that in the laying out of new streets the line of frontage should be continued through until it met the lines of frontage of adjoining streets; but the council felt that where buildings already exist at the corners of streets, the application of such a rule, however desirable, would cause such injury to the owners that it should only be carried out on giving compensation. Words have been introduced specially exempting existing rights from the operation of the clause. The proposal to limit the height of new buildings to 70ft. was modified in committee to 90ft. from the level of the ground to the level of the parapet. This is probably a reasonable compromise, and will save London from a multiplication of the monstrosities which threatened to invade the skies, without putting too much restriction on building owners. The London Streets (Removal of Gates) Act was a measure which can hardly fail to considerably affect large masses of property in the central districts of London. The Act makes provision for compensation to the freeholder for "injuriously affecting," but no compensation is given to those persons to whom quiet is a special object, on the strength of the exclusion of traffic, and who have taken many of the houses in those secluded streets. The Housing of the Working Classes Act is one of the most important measures of the session. It is a consolidating Act, and proposes to deal in a very comprehensive manner with so-called insanitary areas and unhealthy dwellings, both in towns and in the districts of rural sanitary authorities. The rehousing provisions, which formed the principal obstacle to the carrying out of Cross's Acts, are re-enacted; but, on the other hand, the law relating to the assessment of compensation is modified by making evidence receivable that the rental of the property was enhanced by its illegal use, that it is a nuisance within the meaning of the Acts relating to nuisances, or that it is not capable of being made fit for human habitation. The arbitrator is authorised to award compensation under either of the first two categories, on the basis of the lower rental obtainable if the premises were legally and properly used, and, in the case of the third category, on the value of the land and the mere materials of the buildings. No surveyor worthy of the name will find fault with provisions which prevent unscrupulous persons from obtaining compensation on rentals swollen by a disregard of the principles of humanity and common decency. As local authorities are not empowered by the Act to re-cover the cleared sites without the special approval of the confirming body, it is to be hoped that the effect of the diminished compensation paid will be to enable them to offer the sites on such terms as will induce improvement societies to engage in the work of reconstruction. But with every desire

to see many of the acknowledged evils of overcrowding promptly remedied, I have great doubts whether much will be achieved under this ambitious measure. The fatal weakness which underlies all this class of legislation is the assumption that the rates are an inexhaustible fund on which to draw for every purpose that may be in the abstract desirable, whereas, as a matter of fact, the ratepayer is already saddled with an almost intolerable burden. I do not, however, imply that there has been any sensible addition to the burden of local taxation in country districts during recent years, although there has been a steady increase in the total amount of rates levied in England and Wales during the past eight years, representing a rise of 22¾ per cent. between 1880 and 1888. Within the last few weeks we have witnessed a revival of the project for the purchase of the London water companies. I may venture the opinion that London will never again get so good a bargain as was placed within its reach by the ability of our late distinguished colleague, Mr. Edmund James Smith, whose proposals fell a prey to political exigencies, and who may be said to have died a martyr to the cause. The Select Committee of the House of Commons on Town Holdings continues to drag along its path of inquiry. During the present year its investigations have dealt with the proposed special taxation of ground-values, but the evidence bearing upon the subject is not yet complete. Eleven witnesses, however, have been examined, of whom eight are in favour of a change in the law of rating, and we may assume that the case against the present system has now been stated in its strongest form. An examination, however, of the published evidence shows that the representatives of the party of change are by no means in agreement among themselves as to the principle on which the proposed taxation should be based, or of the scheme by which it should be carried into effect. Having alluded to the great development in the Metropolis of the system of collective occupation of dwellings in flats, although, oddly enough, it is now falling into disfavour in Scotland, and having expressed an opinion adverse to the establishment of a National School of Forestry, the President concluded: The session upon which we enter to-night will introduce an epoch most interesting as regards the future of the institution. We stand committed to what is virtually a revolution in our constitution. It was assumed that ten years was sufficient notice to the profession of the impending compulsory examinations, and, speaking generally, we have secured the complete adhesion of the rising generation of surveyors, which has, in large numbers, been making its way into the institution through the examination system applicable to the younger men. During the last seven years we have also been so happy as to draw into our ranks most of the leading surveyors of all classes in England and Wales. Any of our professional brethren, possessing the requisite qualification of five years' practice, not yet on our roll, have still for a few months the option of applying for admission without the ordeal of examination, and their applications will receive all due consideration at our hands. It is to be earnestly hoped that the institution will find itself completely representative of the whole profession before the advent of the important change to which I have alluded.

THE WHITEFIELD CHAPEL COMPETITION.

AT a business meeting of the Royal Institute of British Architects, held on Monday evening, the President, Mr. Waterhouse, R.A., in the chair, Mr. William Woodward was about to bring forward the subject of the Whitefield Chapel Competition, of which he had given due notice and which was placed upon the agenda, when Mr. Lacy W. Ridge rose to order and objected that the matter was a private one, and could not be discussed at the meeting—that it was one which under the by-law must only come before the Council. The President said that he and some members of Council were of the same opinion, and that there had been some error in placing the matter on the agenda. Mr. Charles Barry supported this view, and suggested that it should be put to the meeting to strike out the subject from the agenda of the evening. Mr. William Woodward asked leave to explain, and said that beyond the general interest which he took in seeing fair play in all matters, and in the desire to uphold a high standard of professional practice, he had not the least personal concern directly or indirectly in this Whitefield Chapel Competition—it was with him a question of principle. Has an assessor discretionary power to award the prize to a competitor who has ignored or disregarded the instructions; if so, to what extent? Then how are competitors to guide themselves, and to what extent, in also ignoring the instructions? Further, Mr. Woodward said, he considered that the subject was essentially one to be discussed at that meeting. First, it was one affecting seriously matters of professional practice; secondly, it was a subject connected with competitions, and competitions were officially recognised by the Institute as coming within its cognisance, as shown by the recommendations to competitors, to assessors, and to those about to engage in competitions, printed in the Institute Calendar; and thirdly, that, as he (Mr. Woodward) understood, Professor Roger Smith had been nominated by the Institute as assessor, and surely the members had a voice in the result of that nomination—At this point Mr. Octavius Hansard, filled with enthusiasm, and exhibiting a little timely theatrical display, said that he could stand it no longer—that Mr. Woodward had somehow or other "done it," and that the matter must be stopped. Mr. Woodward urged that it was only due to the meeting and to Professor Roger Smith that he should be allowed to state his case. Professor Roger Smith said that he would be quite willing to attend any committee to which the subject might be referred, and to explain to it and to Mr. Woodward the reasons for his decision. It was then proposed by Mr. Lacy W. Ridge, seconded by Mr. Charles Barry, "That the motion in the agenda relating to the Whitefield Chapel Competition be erased," and upon a show of hands it was found that 23 voted for the resolution and 16 against it. The President then said that, if Mr. Woodward desired it, he could bring the subject before the Council of the Institute. Mr. Woodward replied that, with all due deference to the President, to the members of the Council present, and to the meeting, he absolutely declined to bring the subject before the Council, and thus the matter dropped.

NOTES FROM EDINBURGH.

RUMOURS of great changes are in the air affecting the whole of the valley which lies between the ancient and modern city. The remodelling of the N.B. station and the extension of the limits hitherto assigned the railway for its passage to and from the west; the purchase of the gas works and construction of a goods station; the acquisition by the company of the Waverley Market; suggestions for another North Bridge, in one or two spans, and another at a lower level between the Calton and Jeffrey-street—these, with other and somewhat rival proposals by the Caledonian Railway, to utilise the Waverley Market as a side station on their line to Leith, by tunnel along Princes-street, so making, at least for passenger traffic, a central station at the Waverley, are all, as they have been for some time, still matters of discussion. Ward meetings have shown strong partisan leanings in favour of the respective proposals of the two great rivals. The Architectural Association have also sat upon them. The Town Council have received deputations from the railway managers, and as yet no definite conclusion seems to be arrived at. The Architectural Association recommended neither scheme, but strongly urged on the council to see that the amenity and architecture of this portion of the town were not needlessly sacrificed for the convenience of the railways.

The matters at issue will be finally disposed of by Parliamentary Committee. But some things are quite intelligible to the outside public, whose mouthpiece is, or ought to be, the Town Council. Assuming that the goods and passenger traffic of the N.B.R. must in any case be separated now, owing to the vast increase of traffic occasioned by the opening of the Forth Bridge, it seems an unnecessary requirement to ask a greater breadth of station room than that already occupied. Anyone looking over the North Bridge can see at a glance over the expanse, stretching eastward and westward even beyond the Waverley Bridge, that there is ample space in width and abundant length for the through trains arriving from east and west. The local and suburban trains are of less consequence, as far as regards contiguity to the main platforms, and it seems to most people that a little better arrangement could provide for all the passenger trains in less than the space that will be available when the goods traffic is disposed of further east.

Another principal consideration, equally obvious to all, is the immense advantage to travellers by either railway of immediate connection, or easy access, or of what would be a central station for the passenger traffic, or make up, in some means, for the want of it. At present the whole length of Princes-street has to be traversed, with luggage possibly to book at both stations; delays are occasioned, and generally much inconvenience is felt. The late Sir James Gowan gets credit for suggesting this as an improvement on the Caledonian Railway proposals of last year. It commends itself as really the only practical solution of the difficuty of providing a central station. If carried out, the Caledonian would run by tunnel along Princes-street into the Waverley Market, which is to retain its present exterior, and a flight of steps would lead at once to the Waverley platform. The engineering difficulties for the tunnel are less than by any other route, and consist not so much in getting into the Waverley Market, as in getting out of it to Leith.

Another, but more roundabout and defective, method of providing for easier access from the one railway to the other has been proposed, by making the tunnel in the line of George-street, and a station in St. James's-square. This, however, would be little better, and not much more suitable, as far as delay or inconvenience of changing are concerned, than the present arrangement is, and will not likely be promoted by the railway.

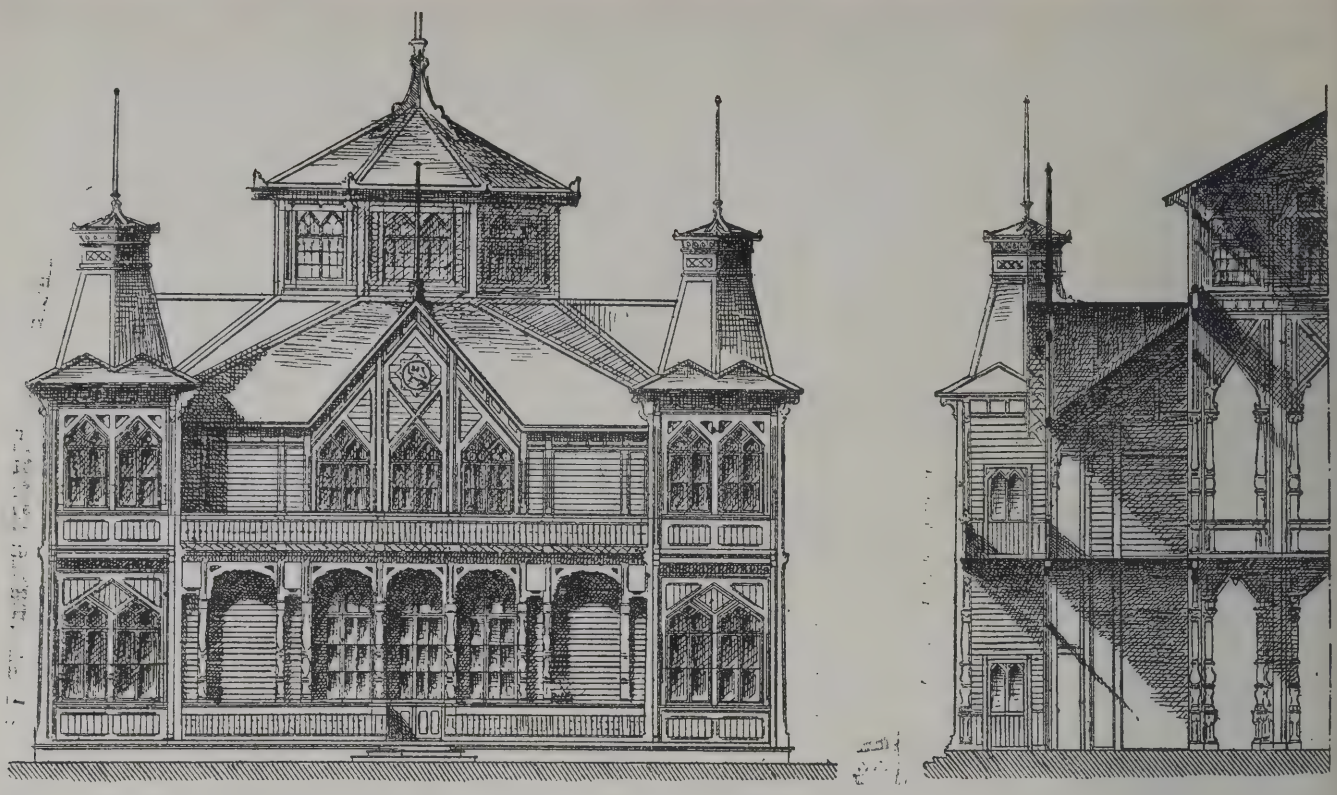
The alarm about shaking foundations by construction of a tunnel has no grounds to rest upon, in the opinion of competent engineers. The Scotland-street tunnel is not a case in point, as it was made on a steep gradient and through varying strata. It is not possible that a tunnel in or near the centre of the wide thoroughfare of Princes-street could injuriously affect the growth of the trees, as it would, if anything, throw any moisture to the roots, and the piles on which the Royal Institution and Scott Monument are built are far beyond the reach of any disturbance by works so much above their level.

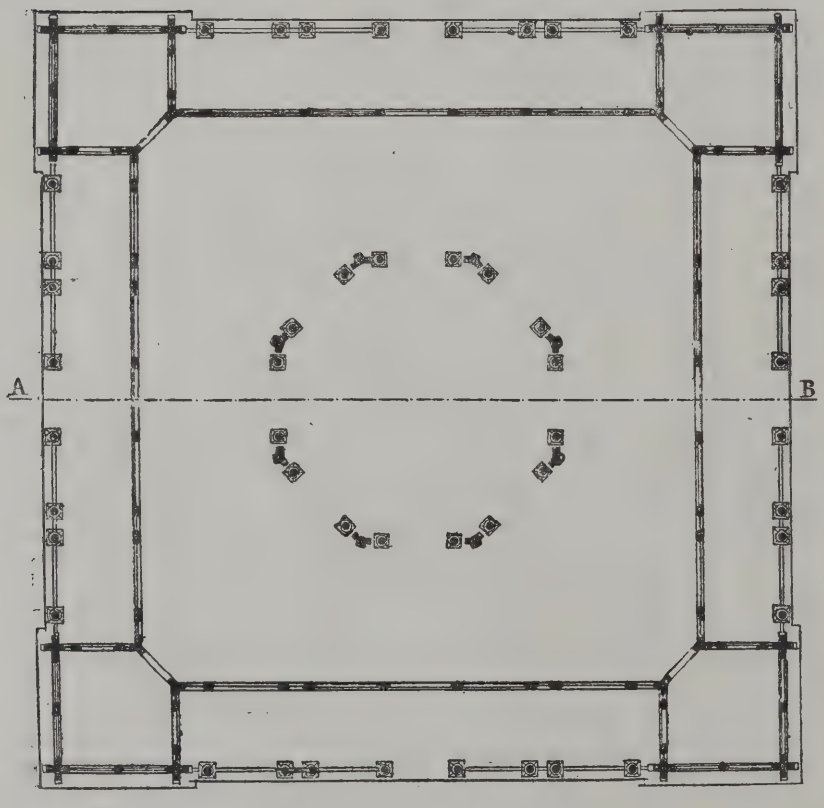
The station for the terminus of the Caledonian Railway, as it is to be erected shortly in the west end of Princes-street, will not add any very important architectural feature to the locality, which for so many years has been something little better than a vacancy. The idea of building a large station hotel having been abandoned, there remains only the passengers' shed and accessories to provide for. In the design, now to be seen in many shop windows, the architectural detail is apparently confined to a somewhat narrow frontage, brought farther forward than formerly. The elevation to Lothian-road is vastly greater in its length, and over it are visible the tops of the carriage and platform sheds. The front has three entrances for cabs and passengers, and is surmounted by a lofty Mansard roof, the Lothian side elevation consisting of a range of semicircular-headed windows between Classical piers, and the usual entablatures. Nothing better probably could be devised without treating the whole as a piece of engineering iron construction, and there will always be the incongruity between the little bit of architecture and the monster sheds—a defect which goes far to mar the appearance of the large Industrial Museum. The arrangements for convenience of the public, however, are excellent.

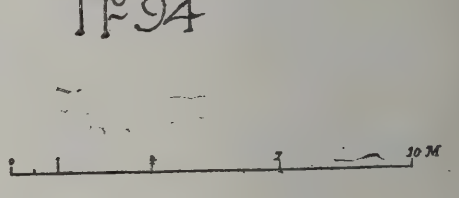
The City is waking up to the conviction that it has made a bad bargain with the Gas Company, and complaints are general of the bad quality of the gas. The present gasworks, with the chimney, it is to be hoped, will ere long be removed, and a better bargain concluded.

The Chapter House of St. Mary's Cathedral is well advanced, and will be a great addition to the cathedral, in as far as its eastern elevation is concerned. The appearance of this end from the east end of Melville-street has never been much admired. The addition of the Chapter House and other buildings to be erected will make the whole much more cathedral-like.

The foundation-stone of the north-western extension of the General Post Office, occupying the site of the Money Order Office and Queen's Hotel, was laid by the Postmaster-General yesterday (Thursday).







CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—XIX.

By Banister Fletcher, Jun., A.R.I.B.A.

THE TELEPHONE PAVILION.

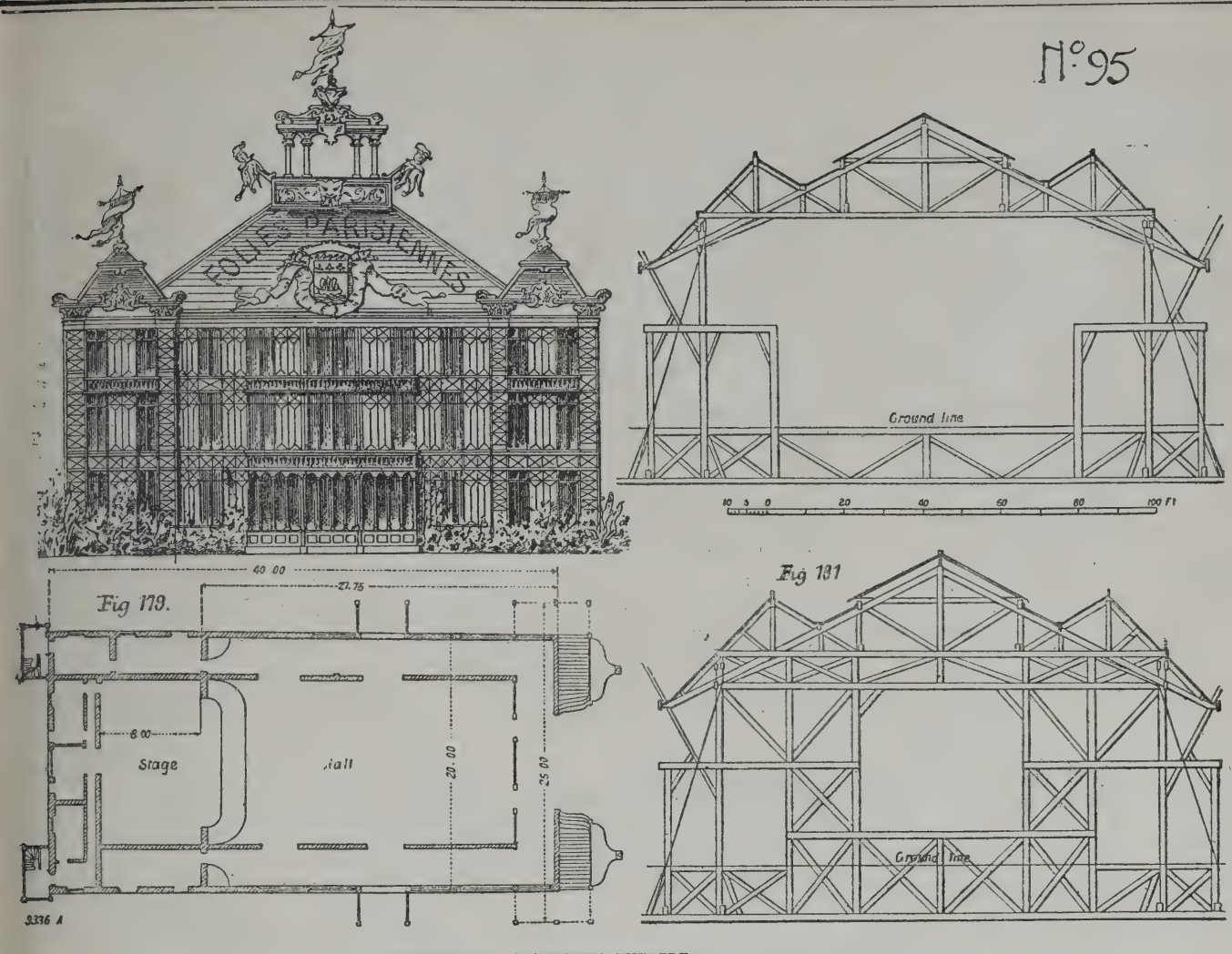
THE architect is M. André. The building is an example of wood-and-iron construction; but in this case the iron is put in as flitches. The uprights and horizontal frames of the building are of wood, joined by iron flitches, and filled in with wood panelling.

A tower is carried up in the centre on wood flitch uprights, and bound together above by circular iron girders. The wires for the telephones are connected to the drum of this tower. The floors are carried by iron joists. Eight of the principal posts to the front are carried up as shown, and utilised to carry the wires.

THE FINLAND PAVILION

Is constructed entirely in wood, square in plan, surrounding an octagonal court 23ft. across, roofed over, and lighted below the eaves. There are four angle turrets, of the form shown, about 10ft. by 10ft. The design is founded on a Scandinavian house. The angle turrets are joined at the ground floor by open galleries. The internal pillars carrying the dome are joined to the angle turret by wooden beams carrying the first floor. In consequence of the snow, glazed roofs are unknown in Finland, and the light, therefore, comes in at the sides below the roof of the dome, which is in zinc. The heads of all windows, it will be noticed, are ⌒ shape. (See above.)

The Norwegian and Swedish pavilions are really reproductions of modern houses there, built entirely in wood and of the Châlet type of construction, of pitch pine, varnished, and were sent over in pieces and put together in Paris. The undersides of the staircases, the ceilings, the

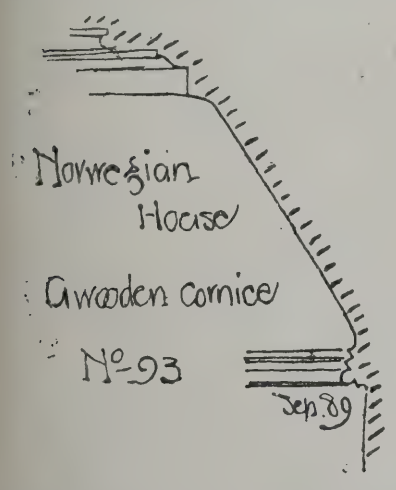


THE FOLIES PARISIENNES THEATRE.

walls and cornices to the rooms are also board (the walls, &c., in match-boarding). The Swedish Exhibition contains a large variety of Swedish doors.

THE DUTCH DIAMOND-CUTTING PAVILION,

by M. Niermans, architect, in the style of the Dutch Renaissance. It is constructed to look



like brickwork and stonework, and the deception is complete until you tap it and hear a hollow sound; it is in pan-de-bois, or wood framing filled in with brickwork and plastered in front. In this case the building is supposed to be constructed in brick and stone, as so many Dutch buildings are, and the colouring of the bricks and the brick joints are performed with such an exactitude to nature that it is with difficulty you can persuade yourself it is not really brickwork and stonework you are looking at. It is a splendid example how the Parisian workmen can use their native material.

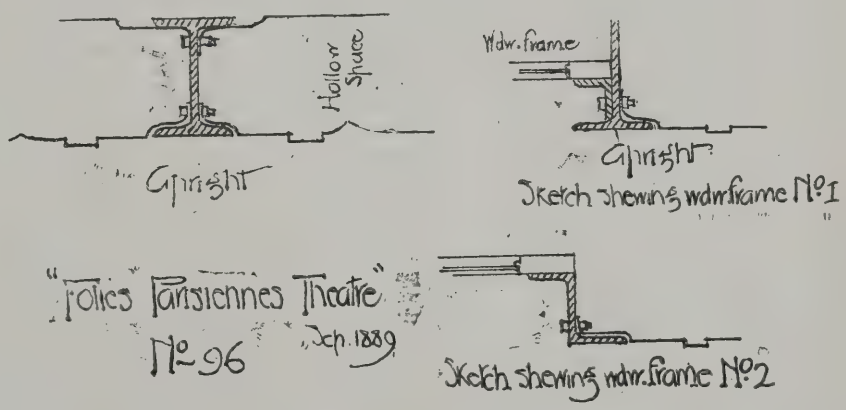
The roof is covered with slate. Above the window openings and under the semicircular inclosing arch are beautifully-imitated plaster panels of old delf ware, and over the central entrance are the iron ties one meets so often in Holland. Altogether this pavilion is one of the most satisfactorily-designed and executed in this part of the grounds.

The "Folies Parisiennes" Theatre merits consideration. The architects are Messrs. Daubray, Scipion, and Richard. It covers an area of 151ft. by 65ft., and in consequence of its extreme lightness no foundations are necessary.

The building is divided into two parts, the auditorium and the stage. The auditorium presents no special features, being constructed entirely of pan-de-bois (or brick-nog walling) and plaster face, and with painted canvas in parts.

I should say, before proceeding, that the building rests upon a V-iron framing, simply resting on the ground. The first-floor joists also rest on a frame of the same description.

It is the stage, however, and the parts connected with it which present a new method of construction. It is entirely constructed of iron uprights and horizontal irons, between which are fixed, by means of screws, externally and internally, embossed steel plates, ·04in. thick; the embossing is performed to add strength to the plates, and also for ornamentation. There is thus a hollow wall tending to equalise the temperature within. The roof is also formed with thin steel plates. It is known as the "Danby" system, and is patented. The builders were Messrs. Schryver and Co.



Between the principal framing are the light T-irons, to which the panels are bolted. The ceiling is formed also of steel plates between the iron joists. The angles of the building are strengthened by standards from top to bottom of the building.

At the parish church of Laisters, near Hereford, last week, two stained windows, both the work of Messrs. Ward and Hughes, of Frith-street, London, were unveiled. One occupies the east end of the church, and represents the Resurrection; the other is in the south wall of chancel.

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ILLUSTRATIONS.

"FOUR FAIR WOMEN": DRAWN BY HENRY HOLIDAY.—SELECTED DESIGN FOR THE NEW PUBLIC BATHS AND WASH-HOUSES, ISLINGTON.—NEW BANKING PREMISES, LLANELLY.—WALLHURST MANOR, COWFOLD, SUSSEX.—PHOTOGRAPHS FROM OXFORDSHIRE, ILLUSTRATING MR. J. L. ROBINSON'S PAPER READ BEFORE THE ARCHITECTURAL ASSOCIATION.—NEW WESLEYAN CHAPEL AND SCHOOLS, BOULOGNE.—A PEARWOOD CABINET.

Our Illustrations.

"FOUR FAIR WOMEN," FROM THE ROYAL ACADEMY EXHIBITION.

These four figures are from Mr. Henry Holiday's series of decorative cartoons shown at Burlington House last summer, in illustration of Tennyson's "Dream of Fair Women." We propose at an early day to give the two remaining characters, Joan of Arc and Fair Rosamond, to a larger scale. Iphigenia, the first figure on our sheet to-day, was the daughter of Agamemnon, King of Argos, who was offered in sacrifice to satisfy Artemis when the Greek fleet was windbound at Aulis. Artemis, being appeased by the submission of the Greek maid, carried her off to Tauris, and substituted a hind on the altar in her place. Jephthah's Daughter comes next, and then Cleopatra, pointing to the bite of the asp. The last figure is that of Helen, whose disastrous beauty led to the Trojan War.

PUBLIC BATHS AND WASH-HOUSES, ST. MARY'S, ISLINGTON.

(For description and sketch plan see pp. 708, 709.)

BANK PREMISES, LLANELLY.

This building is situated in Stepney-street, Llanelly, Carmarthenshire. The stone used for the portion of the building is red Runcorn sandstone. The projecting gable is covered with red tiles, and the bricks are of red Ruabon, the roof being covered with Broseley tiles. The bank is being built by Messrs. Randell and Sons, Llanelly, for The South Wales Union Bank, Limited, the contractors being Messrs. B. Howell and Son, of Llanelly. The whole has been carried out from the designs of Messrs. J. Buckley Wilson, F.R.I.B.A., and Glendinning Moxham, M.S.A., architects, of Swansea and Llanelly.

WALLHURST MANOR, COWFOLD, SUSSEX.

This ancient Sussex Manor-house, situate in the parish of Cowfold, is believed to have been erected in the time of Charles I., on the site of an older building. John de Walhurst made the return for the parish at the Nona Inquisition in 1345. It is mentioned in the will of Roger Agate, 1530, whose brass is in Cowfold Church. The early part of the 18th century it belonged to the Lintotts, and descended with Shermanbury to the Challens, and was subsequently sold to Mr. Wood, whose descendants sold it to the present owner, Mr. Herbert Addington Rigg. The house, which had evidently been a place of some importance, had of late years been used as a farmhouse; it has been restored and added to under the superintendence of Mr. F. Wheeler, F.R.I.B.A., 22, Chancery-lane, W.C., and 50, Carfax, Horsham, Sussex. The exterior is executed in Bolney stone, and the roofs are covered with Sussex stone tiles removed from the old roofs. The barge-boards, &c., are of oak, the casements throughout are of wrought iron, lead glazed. The old work, to be seen from the drawing we illustrate to-day, extends from the ivy-covered chimney to the porch, the latter, with the remainder of the work shown, represents the additions. Internally, the fittings are generally of oak, care having been taken to preserve the detail of the old work. The entrance hall, which faces the north, is open to roof, all the old oak beams having been utilised as far as possible. There is an oak minstrel gallery at one end looking into hall, and a massive carved stone chimney corner. The whole of the works have been executed by Mr. Peters, of Horsham, who has also, under Mr. Wheeler's superintendence and from his designs, erected the lodge, stabling, cottages, and farm buildings on various portions of the estate.

PHOTOGRAPHS FROM OXFORDSHIRE.

See page 710, for Mr. J. L. Robinson's paper, read before the Architectural Association.

WESLEYAN CHAPEL AND RESIDENCE, BOULOGNE.

This building, from the designs of Mr. Charles Bell, F.R.I.B.A., is now in course of erection at this French watering-place, and comprises a minister's house, as well as the usual accommodation for preaching and services attended chiefly by English visitors.

PEARWOOD CABINET.

This cabinet, illustrated on another page, is made principally of pear-tree wood, and is inlaid with marquetry of various coloured woods. It may be attributed to the 15th century, and seems of Flemish origin. The upper part opens by means of two doors, and is supported by arch-work and angle-columns. The original is at the South Kensington Museum.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Birmingham Master Builders' Association.—The annual meeting of this association was held on the 13th inst., at the office of the secretary (Mr. E. J. Bigwood), Colmore-row, Mr. C. H. Barnsley presiding. The annual report stated that the improvement in the state of trade mentioned in the last report had been fairly maintained. At the commencement of the year the committee had to deal with notices from the bricklayers, carpenters, masons, and plasterers, demanding an advance of wages and other alterations in the working rules. Subsequently letters were received from two societies representing the labourers asking for a code of rules and an advance in wages. The usual counter-notices were sent to the bricklayers, carpenters, masons, and plasterers, and in framing them every effort was made to secure a uniform set of working rules in all branches of the trade. Conciliation meetings were held, and the association offered to the operatives an advance of halfpenny per hour either for one year or three years. This was accepted for three years by the carpenters, plasterers, and stonemasons, but the bricklayers declined to accept less than their full demand of 1d. per hour increase. In April the bricklayers accepted the advance offered—viz., ½d. per hour for one year, as did also the labourers, and no cessation of work occurred. Notices had just been received from the plumbers and from the general labourers asking for an advance of ½d. per hour. An invitation was given to the National Association of Master Builders to hold its next meeting in Birmingham. This would take place in January, 1891. The schedule of daywork prices had been revised and circulated among the members of the association and of the architectural profession. On the motion of the Chairman, seconded by Mr. W. Sapcote, the report was approved. Mr. Barnsley was re-elected as president, on the motion of Messrs. J. J. Moffat (vice-president) and Sapcote. Mr. Moffat was re-elected vice-president, Mr. W. J. Whittall treasurer, Messrs. T. Surman and W. Sapcote auditors, and Mr. Bigwood secretary.

Bradford Architects' and Surveyors' Association.—The following is the syllabus for the present session of the association, which was opened on Tuesday week by an address from the President, Mr. James Ledingham: Nov. 25 (Tuesday next), "Fifty Years of Sanitary Progress," by Mr. T. Preston; Dec. 29th, "Where to Spend a Bank Holiday," by Mr. W. Hoffman Wood; Jan. 6th, 1891, social evening; Jan. 20th, "Strains on Iron Roofs," by Mr. W. H. S. Dawson; Feb. 4th, "House Building," by Mr. William Longley; Feb. 18th, "Natural and Artificial Concrete," by Mr. J. J. Black, and "Gothic Traceries," by Mr. T. E. Taylor; March 4th, "Mouldings," by Mr. W. E. V. Compton; and March 18th, Address by the Vice-President, Mr. J. H. Cox, borough surveyor.

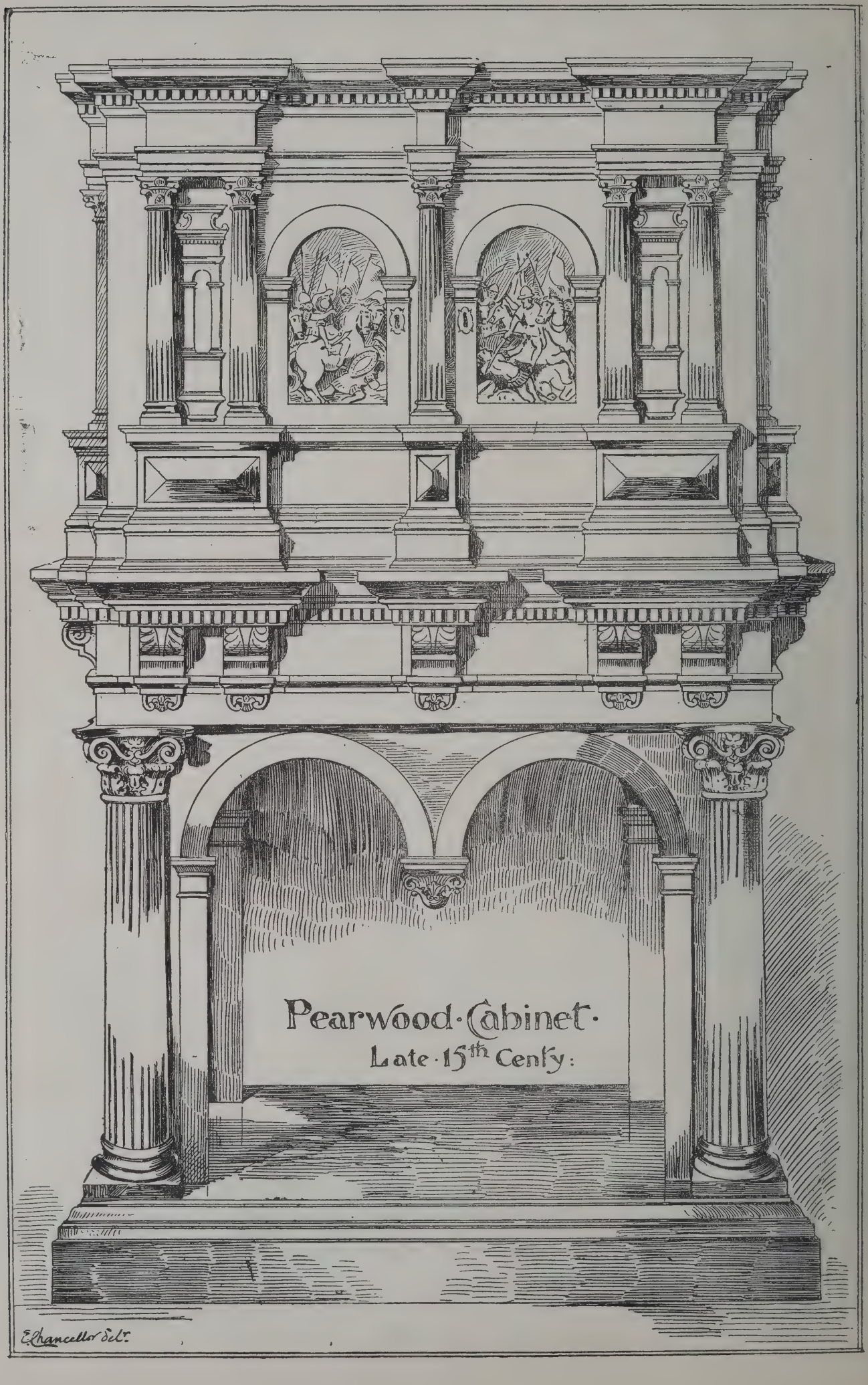
The Edinburgh Association of Science and Art.—The executive committee of this association has made the following among other awards for papers read before the association last session:—Diplomas of merit to Mr. A. D. Mackenzie, the president, for his paper on "The Principles which Govern the Circulation of Water in Pipes"; Mr. T. R. Procter, for his paper on "Cold and Hot Water Supply in connection with Dwelling-Houses"; Professor Gerald Baldwin Brown, for his paper on "The New Town of Edinburgh." A bronze medal has been awarded to Mr. James M'Donald for his paper on "The application of Lead to Building Construction"; and a book prize to Mr. Simon Slater, for his paper on "A New Method of Slapping Openings for Shop Fronts."

Glasgow Architectural Society.—The architectural branch of the Glasgow Philosophical Society commenced the winter session on Monday night, when the president, Mr. James Thomson, F.R.I.B.A., delivered the inaugural address, in the course of which he alluded to the erection of picture galleries and museums in large cities, and while advocating the maintenance of these institutions, he thought that more might be done in the direction of providing people's palaces and recreation halls. As to the housing of the working classes, he considered that a great deal had been done in that direction, but what was now wanted seemed to be better accommodation for the lower orders, at a rental which would not be prohibitory.

Leeds and Yorkshire Architectural Society.—The fifteenth session of this society was opened on Wednesday evening by the presidential address of Mr. W. H. Thorp, F.R.I.B.A. The president briefly traced the history of the society, and alluded to several matters of detail in which improvement might be brought about, and said it was desirable that they should keep abreast with others in the advancement of technical education. He regretted the present condition of the society's sketching club, and urged the members to revive it, and avail themselves of the undoubted advantages which it possessed. He expressed his pleasure that during recent years there had been a wider recognition of native talent in Leeds than previously. In several instances important works had been given to local architects. He hoped that the new post-office would be worthy of its conspicuous position, and take its place among the finest buildings in the town. His opinion of the building, formed upon seeing the sketches in the newspapers, was not altogether satisfactory, and it seemed to him that the architect to the Post Office Department had not risen to the height of the situation. He said he was glad to notice that an attempt was to be made to improve the streets of the town. Subsequently the silver medal and £5 5s. offered by the President for set of measured drawings of the King's Manor, York, was presented to Mr. Walter Peters.

Sheffield Society of Architects and Surveyors.—At the monthly meeting of this society on Tuesday night, Mr. J. R. Wigfull read a paper on "Domestic Sanitary Fittings." The subject was, he observed, one of special importance to Sheffield architects now that the town council were contemplating the system of sewerage disposal by water-carriage. The new by-laws would tend, moreover, to improve sanitary work in the homes of all classes of the community. The various kinds of w.c.-apparatus were noticed, and the different ways of constructing and jointing soil-pipes described; with the systems of ventilation, sewer-disconnection, &c.

Mr. Thomas Collins, the well-known contractor, has been elected Mayor of Tewkesbury.


Pearwood · Cabinet ·
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E. Chancellor del.



WESLEYAN CHURCH, SCHOOL & MINISTER'S HOUSE
BOULOGNE SUR MER FRANCE

WAYSIDE NOTES.

IN the reorganisation of the London water supply there would seem to be difficulties over and above those connected with the engineering works and practical matters. It appears that the persons interested in this subject may be broadly arranged in two parties—one dealing with the water supply and its possibilities of improvement both as to quality and quantity, and the other occupied with questions concerning the management of affairs at what time the Metropolitan water and its distribution are handed over to the public. A meeting of members of the latter party was holden on the 18th at 33, New Broad-street, and consisting of the sanitary authorities of Essex whose districts are served by the East London Water Company, representatives of local authorities in Middlesex, Essex, Herts, Surrey, and Kent being also in attendance. Thereat it was resolved that the London County Council be objected to as the governing body, and that opposition should be made to any scheme that does not give the sub-metropolitan districts full representation in proportion to their population.

With the spirit of this resolution we shall entirely concur. The County Council has quite enough work on its hands, and is likely to have in the future, especially if it is going in for pupil-farming. When, as sooner or later it must be, the water supplies of the Metropolis are taken over and placed in the hands of public servants, a huge concern will be created, which will need for its administration a special governing body, with its own staff of engineers, &c. We know that the County Council are anxious to acquire Parliamentary powers to gain this post for themselves; but if things go as they should, Parliament will take care that nothing of the sort happens. Imagine for one moment the vastness of the corporation, were all the water companies supplying Metropolitan and "sub-Metropolitan" districts rolled into one, and we see the folly of the attempt of the Council to gain this extra business for itself and its successors. In my opinion, the water supply should be in the hands of specially-appointed Commissioners with a staff housed with dignity in becoming offices. Words cannot exaggerate the importance of the water supply of a great city; which being so, I observe that a municipal body with already as much, or more, work in its hands than it can get through, is willing to take it on as another odd job.

It has yet to be shown that, taking the water out of the hands of private companies and placing it in the care of public officials, will be of benefit to the community. Every public "department"—hateful word this, somehow—is not managed so admirably as the Post Office. But people think the good is to come, and, properly managed, the benefit should be very considerable, for it is to be hoped that a change in administration will be coincident with a determined attempt to improve the average quality of the water supplied to London citizens and suburban residents. The worst supply should be raised to at least the standard of the New River water, or, ahead of this, the Kent Company's. To do this there seems nothing to fall back upon but the old Roman system of aqueducts, and bringing the water from distant hills, mountains, or table-lands. The Welsh mountains, or Dartmoor, have lately been suggested, and the mere distance of these sources need not dismay. At the same time, it would be unwise, should it be determined to have resource to this method of bringing water from afar, to decide on the source of supply till a scientific commission had inquired fully into the subject. The construction of aqueducts, a hundred miles or so in length, leading to exhaustible supplies, would be a costly blunder, even in these days, when, I take it, erections of ironwork will supersede the masonry devices of antiquity.

Little have I had to do with ordinary competitions, and nothing at all with that peculiar species where the inaugurators announce that a certain sum is to include both the cost of building *and the architect's commission*, the said sum to be in nowise exceeded. It puzzles me to think how the thing is managed. Does the lucky architect agree to go on short commons should the hard-and-fast sum be exceeded? If so, then he is to be pitied, not to say despised. Possibly the majority of competitors go on the principle that it is as well to be on the safe side, and put a design in for a low figure. Some, doubtless, trust to chance to set matters right, and subsequently boast that they have led the town council of Pettytweedleum into paying some 25 per cent. more than they had anticipated. An architect sends in his estimate at £4,590 3s. 10d., exclusive of tower, but including pointing and the glazing of sashes, and the lowest tender comes out £5,840 0s. 11½d., the building committee anticipating that £4,999 would clear building and commission, not to say the bill of extras. I notice—in fact, I am prompted to make these remarks by noticing—one of these *commission-including* competitions. The Huyton-with-Roby Local Board require new offices, and have advertised for plans to be sent in, Jan. 1, 1891. The amount stipulated is £5,000, and this is to include the architect's commission. Why not a little respect for the architect, and say the building is not to exceed £4,760 odd? Advertisements in the "lumping" fashion read so crudely, and do not go to the credit of the parties issuing them.

Much correspondence lately carried on in your columns goes to emphasise the necessity of what I have before said as to the demand for some more careful selection of assessors. It is a great thing to have gained, as architects have done, by reiterating its desirability, the very general appointment of referees or assessors. But the fact that we have thus gained solid ground constitutes no reason why we should not still strive to advance. The next step will be to see that the assessors appointed have special knowledge that will *enable them to appreciate* the studies and labours of competitors in a given branch of design. Of what use is it for a man to be a specialist, or to devote special attention to a branch of design, only to find when he incorporates the ideas and improvements resulting from his studies in a competition plan, that the assessor appointed has not even the knowledge to enable him to appreciate them? This is indeed labour in vain. I hold that an assessor should be specially selected for his task. Hitherto it has been enough that a man should have made something of a name, in a general way, as an architect. We have been so thankful to have an assessor at all, that we have been glad of anyone to come between us and the crude architectural tastes of the cheesemonger and publican. Now we must advance beyond this, the system of assessing must be improved and refined. It is true that the assessors put before the profession are, with the rarest exceptions, architects of known ability; but what the competing architect requires is *special knowledge*, which will be a guarantee that his work will be appreciated to the full.

Competing architects will bear me out as to the need for this reform. It is not, as they will be quite ready to show, in rare instances, that the grievance is legitimate. Every year it would be possible to point out competitions where competitors have had to labour under this disadvantage. How, then, is the reform to be made? Only, so far as I can see, by reiteration of demands. It was a policy of this nature that brought the assessor into general employment. A continuance of agitation will call general attention to the subject, and sooner or later we may hope that competing architects may be spared the galling experience of a kind with which, at the present time, many such are only too familiar.

In the matter of contracts and sub-contracts, thinking men tell us that it is useless in a competitive state of society to patch up both the principles of Socialism—*true Socialism*, that is to say—and not *gutter Socialism*. Viewing matters in this light, which in the main is doubtless the correct one, we shall be of the opinion that socialistic patches on a competitive garment will not wear well. Nevertheless, it is also correct to hold that sweating is a demoralised form of competition, and to be met and combated. Competition, after all, may be, in spite of contrary arguments, an excellent institution; but there is such a thing as riding a good horse to death. Competition there must be till the world wakes up one fine morning all of a socialistic turn of mind. Whether such a day can ever arrive, with human nature as at present constituted, is a question in debate that we will leave for other minds to grapple. Suffice it for us to recognise that in our day competition is, and that men will underbid one another in the struggle for existence. So far, so good, or bad—according to our particular views. These things must needs be till the regeneration of man hoped for by the true Socialist.

The existence of competition, however, is no excuse for its demoralised form—"sweating." It becomes a totally different affair when sharp-witted men—or fiends incarnate—seek, of this very fierceness of competition that the Socialist deplores, to make fortunes out of the straits and difficulties of honest folk. We may lament the principle of competition, and be powerless to alter its laws; but by humane measures and consideration for others—by an exercise of charity—we can see to it that unscrupulous men do not trade on the misfortunes of others. This, I think, is the pith of what can be said for and against contracts and sub-contracts, which must exist under the present order of things. The power to check the demoralisation known as "sweating," however, is in the hands of all principals and managers, whether in public or private life, and it is a moral obligation on such to exert this power to the best of their ability, and thus protect the poor and needy from oppression.

GOTH.

CHIPS.

The foundation stone of St. Anne's Memorial Church was laid at Aberdulas, near Neath, Glam., on Thursday in last week. The church will be Late Gothic in style, and will be seated for 300 persons. Mr. E. H. Lingen-Barker, of Hereford, is the architect, and Mr. Walter Dowland, of Abergavenny, is the builder.

The slender spire and tower of Ashbourne Church are about to be restored in accordance with a report by, and under the direction of, Mr. William White, F.S.A., of London. The foundations of the tower are supposed to have been injured by various excavations for vaults.

Buckingham Chapel, Clifton, Bristol, was re-opened last week after restoration. Messrs. Lewis and Edbrook, of Clifton Vale, were the general contractors; Messrs. Edkins and Sons the decorators, and Mr. W. L. Bernard, of Broad-street, Bristol, was the architect.

The heritors of Earlston, N.B., have adopted plans by Messrs. Hardy and Wight, of Edinburgh, for rebuilding the parish school on the present site. The cost is estimated at £2,800, and the number of sittings will be increased from 570 to 720.

A south aisle, which has been added to the parish church of Western-super-Mare, was dedicated last week. It follows the lines of the north aisle, and in the walls are inserted the windows from the south side of nave. 200 additional sittings are provided by the extension, which has cost £1,600. Messrs. Hans Price and Wooler were the architects, and Messrs. Hawkins and Co., of Glastonbury, were the contractors.

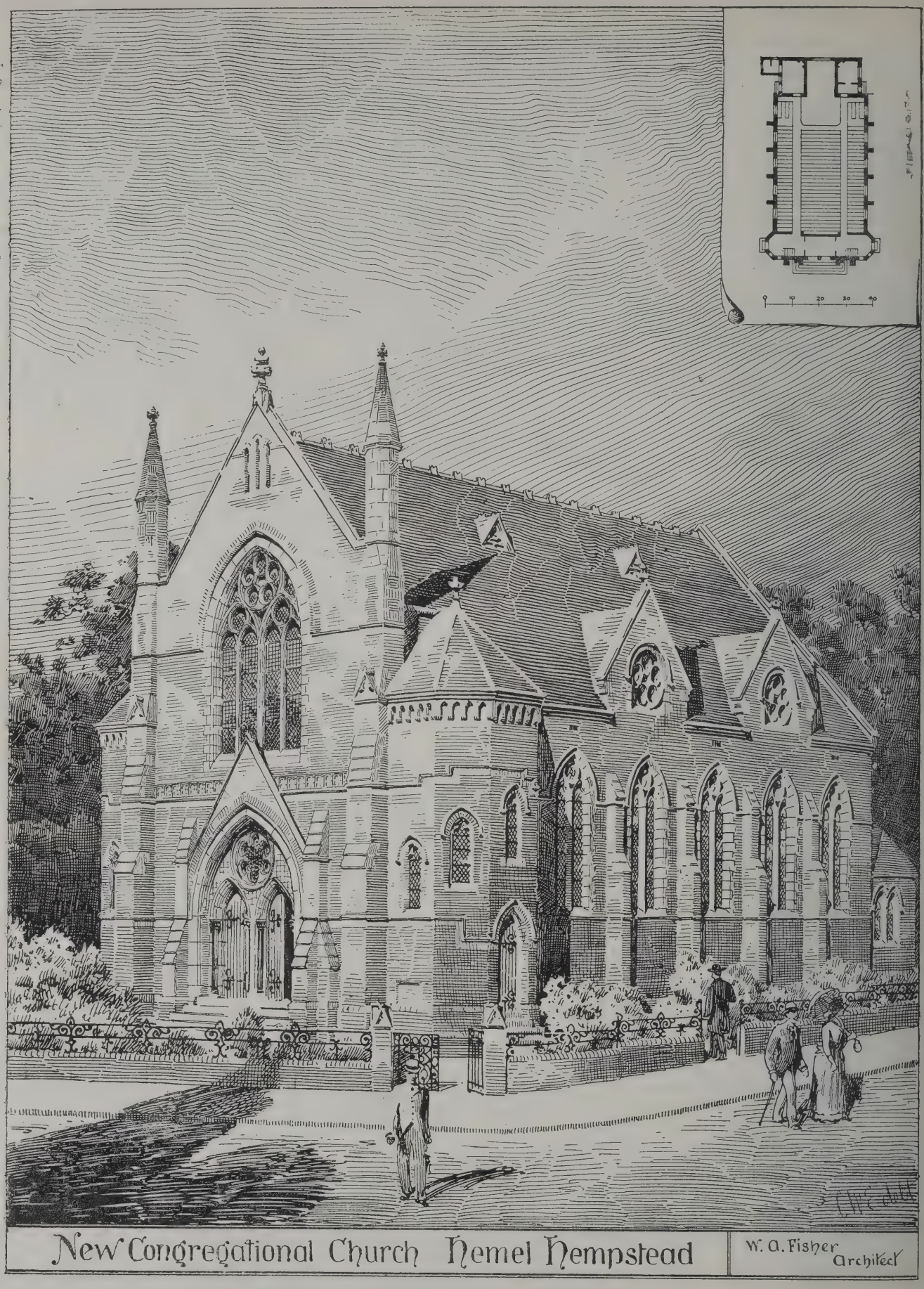
The foundation-stone of Sauchieburn House, near Stirling, was laid last week. The new mansion is being erected by Sir James Maitland, Bart., on the site of old Sauchie House, and is in the Scottish Baronial style, having a square, keep-like tower 90ft. high, with corbelled balcony and bartisans round the top. The house will be one of the largest in Stirlingshire, and the internal arrangements will include hydraulic lifts, electric light, &c. A picture-gallery nearly 50ft. long runs across the house from east to west. The architects are Messrs. Sydney Mitchell and Wilson, Edinburgh.

Toft-by-Newton Church, which has been described as "unique in ugliness and decay," is now in course of restoration, the architect being Mr. Hodgson Fowler. The work, which is estimated to cost £750, has been intrusted to Mr. Bell, of Bridlington.

The Kent County Council, at its last meeting, voted a gratuity of £250 to the county surveyor, Mr. F. W. Ruck, of Maidstone, in recognition of his extra services in the maintenance of main roads, and decided to increase his salary to £650, inclusive of an allowance of £130 a year for clerk's office and stationery, and £120 for travelling expenses.

A new Wesleyan chapel was opened at Talskitty, near Redruth, last week. Mr. Sampson Hill was the architect, and Messrs. Odgers and Lee, of Redruth, were the contractors.

The new City Hospitals, Liverpool, which are nearing completion, are being warmed and ventilated throughout by means of Shorland's patent double-fronted Manchester stoves, supplied by Mr. E. H. Shorland, of Manchester.



CONGREGATIONAL CHURCH, HEMEL HEMPSTEAD.

THIS building occupies a prominent corner site in an improving part of the town, and was opened on the 4th inst. The plan consists of an interior, 60ft. by 33ft., with organ-chamber and vestries extending 14ft. in the rear. The height from floor to ceiling-tie is 34ft., and from floor to slope of roof boarding 22ft. A gallery 15ft. wide extends over the entrance lobbies and vestibule, and is approached by two stone staircases leading therefrom. The roof is constructed on the hammer-beam principle, and with Gothic ribs and piecings, and is, with the whole of the wood-work, executed in pitch-pine. A plain but effective design in the Early English style has been adopted. The materials used are Bath stone jambs, mullions, and quoins for the door and window openings, &c., red and grey local bricks for the exterior, and Bearts for the interior, relieved by red strings and quoins. A feature has been made of the entrance doorway, which is in a buttressed and deeply-recessed porch, and the main buttresses terminate with stone pinnacles and carved crockets. The artificial lighting is by three 18-light coronæ. The contract was taken in April last by Mr. E. Horn, of Hemel Hempstead, for £1,893, which sum includes a provision of £250 for seats, heating,

id lighting. Accommodation is provided for 00 persons. The architect is Mr. W. A. Fisher, Marlowes, Hemel Hempstead, who has per-onally superintended the works.

HE LONDON COUNTY COUNCIL AND CONTRACTS.

THE report on the question of contracts prepared by a special committee of the London ounty Council, and of which we gave a ummary last week, p. 702, was presented to that ody on Tuesday. The chief recommendations f the report were: (*a*) That the following words e added to the clause now inserted in the ouncil's contracts with reference to sub-letting r sub-contracting:—"But the Council retains ower to allow the contractor to sub-let such pecial portions of the work as would not be pro-uced or carried out by him in the ordinary ourse of his business." (*b*) That all work of a ontinuous nature, which does not involve a large utlay of plant, &c., such as the cleaning and atching of the bridges and embankments, &c., nder the control of the Council, be executed as ar as possible by men directly employed by the ouncil, without the intervention of a contractor.

Mr. Arthur Arnold, in moving that (*a*) be eferred back to the committee, contended that he effect of the present clause was to restrict ompetition among contractors, and the conse-uence had been that they received no tenders or a great contract issued some time ago, and in nother case only two. Not only was compe-ition restricted, but contractors did not like this air wages declaration, because they might have ix or eight contracts going on in different parts f the country, in reference to which they had no uch obligation. No benefit had accrued to the abourers of London under the clause.

The amendment was seconded by Mr. Howell Williams, and opposed by Mr. Burns, who declared that the result of the restrictive clause hey put in their builders' contracts was to obtain he best brickwork in their sewers, and work which obviated the expenditure of money in epairs such as had cost the School Boord £80,000 n two years, equal to an addition of 2d. to the ates. Colonel R. W. Edis urged that, whilst it was most desirable to pay fair wages, it was absolutely impossible to prevent sub-letting, for in nearly all large contracts there were special kinds of work which must be sub-let. The amendment was lost, and the report of the committee agreed to.

CHIPS.

The Islington Vestry have appointed Mr. T. Ridyard Roscoe (chief outdoor assistant in the surveyor's department, Hammersmith) assistant surveyor for the northern portion of their district.

The official gazette of the Salvation Army says that the new Wellington Hall, recently opened at Islington, is "the brightest, happiest, and best-contrived thing turned out up to date." The architect was Mr. J. Williams Dunford, M.S.A., of 100c, Queen Victoria-street, E.C.

The dissolution of partnership is announced as between A. C. W. Hobman and W. R. Hawkins, trading under the style of A. C. W. Hobman and Co., of Stockholm-road, New Cross, tar-paving manufacturers.

Two groups of statuary, executed in black basalt, have just been found in some ruins at Maheswar, Rungpore. They represent mythological deities with features of a Græco-Buddhist type. The chief peculiarity of the discovery is that on the base of one of the group is an inscription in the Landsa character, a mixed form of Devangiri and Thibetan. The relics have been built, by order of the authorities, into the wall of a Hindoo religious hall.

Mr. Onslow Ford, A.R.A., visited Canterbury on Tuesday to inspect the sites that have been proposed for the Marlowe Memorial. He recommended as the most suitable spot for the memorial the vacant space near Christ Church-gate, where formerly stood the old Butter Market. The memorial, for which only £400 has as yet been subscribed, is to take the form of a drinking-fountain, surmounted by a bronze statue of a Muse, to be surrounded by statuettes representing leading characters from Marlowe's plays.

The City Commissioners of Sewers instructed its sanitary committee, on Tuesday, to consider the best means of abating the smoke nuisance.

A new organ, built by Messrs. Wadsworth and Brother, of Oxford-street, Manchester, has just been placed in St. James's Church, Gatley, and was opened on Sunday.

Building Intelligence.

BIRMINGHAM.—A meeting of the Buildings Sub-committee of the Corporation was held at the council-house on Friday, at which the subject was discussed of the alterations necessary at the town-hall. It has been decided to undertake the redecoration of the hall; but the Estates Committee favour a more simple scheme than that which was carried out upon the occasion of the last redecoration, which was of a very elaborate character, and was designed by the late Mr. J. H. Chamberlain. Among the subjects under consideration are the improvement of the exits and the seating of the hall, the present condition of the roof, the ventilation, and the arrangements necessary for the future illumination of the hall with the electric light. The substitution of slate for the leaden roofing has been suggested; but, happily, the committee think this would not be desirable. The sub-committee held a consultation with Mr. J. A. Cossins, architect, who was instructed to look thoroughly into the matter, and to report to a future meeting. Mr. Arthur H. Macmurdo, the President of one of the sections of the Art Congress held a fortnight since in Birmingham, writes:—"No one can enter the town-hall in its present condition without seeing that every principle of architecture, of form, of colour, and of harmony is violated. The result is disastrous to the architecture, and ineffectual in its æsthetic effect. There are examples of halls in Italy most superb in their decoration which might serve as models for the treatment of this hall, and the money the committee proposes to spend is amply sufficient to produce a very grand result. Though the wall-spaces suitable for frescoes are limited, there is yet room for some fresco painting, space for which might be reserved in the scheme of decoration for monumental works in sculpture and painting, illustrating the great achievements of the town or of its individual citizens. Birmingham, therefore, has at this moment a grand opportunity."

EDINBURGH.—To the Free Church Hall erected last year at the corner of Braid-road and Cluny-drive, a permanent church is to be added. This has been designed by Dr. Rowand Anderson, and consists of nave, 98ft. by 33ft., passage aisles on each side, and also transepts. At the north-west corner is to be a tower 30ft. square and 83ft. high, surmounted by a lead-covered spire 65ft. high. A gallery will extend over the west end of the nave. Adjoining the tower are provided vestry, session room, and ladies' room. The church will accommodate 800. The style of architecture adopted is Third Pointed. There are no lights in the aisles, the church being lighted by large windows in the east and west gables, and by the clerestory windows. The framework of the roof is of steel, covered on the inside with wood, and divided longitudinally into compartments by large moulded ribs, these being subdivided into panels by smaller mouldings. Each compartment of the clerestory has two square-headed traceried windows between the buttresses. The total outlay will be about £8,000.

SMITHFIELD.—The modern roof and walls which which have taken the place of the south transept in the church of St. Bartholomew the Great having become greatly dilapidated, it has been resolved to proceed with this portion of the restoration without further delay. A shallow transept is being erected under Mr. Aston Webb's direction, so as to form a buttress to the great arches of the crossing, and this will also open up some fine Norman work, which has until now been concealed by modern internal alterations. The operations have brought to light a Norman triforium arch on the north side, which hitherto has been filled with a firegrate and flue for the vestry, and on the south side a Transitional Norman arch, which was previously hidden in a plastered wall. Adjoining the arch on the south side, the column of the next bay, much weather-worn, has been discovered in the brickwork; but otherwise the original transept has entirely disappeared. There will be a south door in the shallow transept, also a baptistery. On the north side of the church the removal of the benefactions board has revealed a stone screen, of two arches, Early Decorated in character. In consequence of this transept's being still blocked by the blacksmith's forge, these arches are scarcely visible. The Charity Commissioners propose to grant £8,000 towards the cost of the restoration.

WINDSOR CASTLE.—The renovations that have been carried out at Windsor Castle, under the supervision of Mr. Leonard Collman, of the Lord Chamberlain's department, during the absence of the Queen, have been completed. The works include the restoration of the private chapel at the north-east corner of the Castle, the south corridor between the Queen's dining-room in the Victoria Tower and the gateway facing the Long Walk, and library overlooking the north terrace. The Royal pew in the gallery facing the altar of the private chapel is approached from a narrow ante-chamber panelled in white and adorned with historical portraits by Holbein, and on a bracket stands a small gilt clock, said to have been given to Anne Boleyn by Henry VIII. On the walls of the chapel are hung bronze medallion portraits of the late Deans Wellesley and Stanley, and memorials of the late Hon. C. Grey and Sir Thomas Biddulph. The panelled ceiling of the south corridor has been decorated in cream and gold and wainscoted with sage colour, and the costly furniture, and the ebony and ivory cabinets, filled with Sèvres and other valuable porcelain, have been replaced in their customary positions. The appearance of the Royal library, which had not been touched for years, has been greatly improved, and the electric light has been introduced.

Engineering Notes.

BIRMINGHAM BRANCH OF THE INSTITUTION OF CIVIL ENGINEERS.—A meeting of this branch was held at the Midland Institute on Friday, the president (Mr. E. Pritchard) in the chair. Mr. A. D. Greatorex, of Manchester, read a paper upon "House Drainage." A discussion followed, in which the following gentlemen took part:—Messrs. E. Kenworthy, of Handsworth; E. Newdigate, of Leamington; G. L. Till, of Birmingham; E. R. Marks, S. R. Lowecock, R. Godfrey, of King's Norton; and P. G. Parkman.

COMPETITIONS.

KENSINGTON INFIRMARY.—The selected architect for this big work is Mr. T. W. Aldwinckle, F.R.I.B.A., and the second premium has been awarded to Mr. Delissa Joseph, F.R.I.B.A., both architects practising in the City of London.

OSWESTRY.—For the proposed new municipal buildings twenty-six sets of plans have been sent in, and are now under consideration by Mr. T. M. Lockwood, of Chester, the assessor appointed by the corporation. When his recommendation has been considered, the plans will be exhibited in the old British School at Oswestry.

PRITTLEWELL.—A special meeting of the Prittlewell School Board was held on the 3rd inst. to decide upon the plans received in a selected competition for new schools in the Brewery-road, designs having been submitted by Messrs. Charles Bell (London), E. Wright, Walter J. Wood, and J. Taylor, of Southend-on-Sea. The board unanimously selected the plans of Mr. Walter J. Wood in preference to any others submitted, and instructions were directed to be given to the architect to proceed with the work.

Two errors appear in the account of Mr. E. M. Bruce Vaughan's work given in last week's issue. The Grangetown board school provides 1,050 school places, not 150 as stated, and the Radnor board schools 1,120, and not 150 as printed.

A new lecture hall has been erected at Bristol, and special attention has been paid to the ventilation, the extraction of the vitiated air being effected by the latest improved form of Messrs. Robert Boyle and Son's patent self-acting air-pump ventilator.

The Paddington Vestry has referred the Housing of the Working Classes Act, 1890, together with the whole question of dwellings of the labouring classes, to the sanitary committee, with instructions to consider specifically the following points—viz., (a) single water supply, cisterns uncovered and in proximity to w.c. or dust-bin; (b) faulty connections with sewers; (c) overcrowding; (d) houses unfit for human habitation; (e) Committee on Housing of the Working Classes as provided by section 81 of the Act of 1890.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLI., XLIX., L., LI., LIII., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

RECEIVED.—J. J.—G. and W.—C. R. T.—H. H. and Co.—W. D.—M. R. C.—L. of C.—C. of Y.—R. S. B. and Son. W. L.—P. P. and Co.—N.—G. L. and Co.—E. T.—E M. V.

Q. (The paper on "Ventilation, Heating, and Lighting of Libraries," from which we quoted, appears *in extenso* in this month's *Library*, the official journal of the Library Association.)

"BUILDING NEWS" DESIGNING CLUB.

DRAWINGS RECEIVED.—"Oak." "Philomath," "Macbeth,' "Grafton," "Multum in Parvo," "Jope," "Spectre.'

Correspondence.

ISLINGTON BATHS COMPETITION.

To the Editor of the BUILDING NEWS.

SIR,—Two writers in your Correspondence columns in your issue of to-day's date draw attention to a discrepancy that has been discovered recently between the *figured width* and the *drawing* of my second-class bath in the original ground plan sent in to the above. This error admits of a simple, and, I think, acceptable, explanation. In the preparation of my plans, I myself pencilled in all notes and figured dimensions upon the drawings; but by some means or other the assistant who generally does the printing to my plans mistook the "2" of the 27ft. for a "3," making the figured width 37ft., instead of what it should have been, 27ft. In the report, however, accompanying my design the dimension was correctly given—viz., 72ft. by 27ft. This fact, taken in conjunction with the extent of the error (10ft. added to a width of 27ft.), precludes the possibility, I think, of any imputation of unfairness on my part in the matter.

It should, I think, be borne in mind, in criticising plans for the building in question, that the site was inadequate for the *proper* accommodation required by the Commissioners, and that therefore some compromise had to be made by the several competitors in attempting to solve this problem. I, myself, did this at the expense of reducing the size of my second-class bath, and I was enabled thereby to properly provide on the *ground floor* every part of the establishment that should be so accommodated. The provision of slipper baths and the public laundry was so moderate in its requirement as to admit of no reduction in this part of the establishment, and I was of opinion that one of the swimming baths might better bear being reduced in size. A clause of the "conditions" issued to the competitors clearly gave them the right of effecting any such compromise of the conditions that might suggest itself to them. This clause was as follows:—

"*It is suggested that the following accommodation should be provided; but the architect is at liberty to vary and adapt his plan and design to what he may consider more suitable accommodation.*"

This explanation is, I think, due to myself, and I hope you will kindly insert it in your next issue.—I am, &c., A. HESSELL TILTMAN.

70, Torrington-square, W.C., Nov. 14.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS AND THE WHITEFIELD CHAPEL COMPETITION.

SIR,—Your prophecy that the Institute would do nothing in connection with the Whitefield Tabernacle competition question has been fulfilled. Mr. Woodward gave notice that he would raise a discussion on Professor Roger Smith's award at the meeting on the 17th inst. The subject for discussion was on the agenda; but the meeting cancelled the agenda by vote. Of course, the agenda had been drawn up by the authority of the council, and in cancelling it the Institute has virtually passed a vote of censure upon its council.

At the meeting referred to there was manifested a good deal of anxiety to stifle debate. The question was raised whether the subject announced in the agenda was a proper one to be discussed. Mr. Woodward contended that it was a professional subject, and was proceeding to define its nature, when he was stopped by the President, Mr. Waterhouse, on the ground that he was discussing the forbidden subject upon its merits. Of course, it would not have been in order to challenge the ruling of the chair; but we may venture to criticise it now. Mr. Woodward said, in effect, that he wanted to discuss the question whether an assessor was justified in doing so-and-so. He was not entering into the case, he was only giving an abstract definition of the nature of the question which he wished to discuss; and he ought not to have been silenced.

I acquit Mr. Waterhouse of any intention to act unfairly, but I fear he was influenced by a spirit too prevalent in the Institute—a spirit which leads men to shrink from discussing questions of importance, merely because they are of a contentious nature.

The conclusion reached at Monday's meeting was well summed up by Mr. Waterhouse. He said that questions affecting the professional conduct of individuals could not be discussed at meetings, but might be brought before the council. But I believe it is an accepted doctrine that societies which hold business meetings should follow the precedent of the House of Commons, as far as possible, in matters of order and procedure; and when the personal conduct of any M.P. is in question it is discussed in the House, not referred to a Cabinet Council. The secret procedure of the Institute finds its parallel only in the committee transactions of a private club.—I am, &c., GEORGE H. BLAGROVE.

29, Montague-place, Russell-square.

SIR,—To the acknowledged ability and usefulness of the BUILDING NEWS must be added the gift of editorial prophecy.

In the BUILDING NEWS of October 31 last, in reply to several competitors who had expressed the desire to have the Whitefield Chapel Competition brought before the Institute, you said:—"But do any of them really believe the Institute will move in the matter? Did it ever do so in any case of the kind?"

On Monday last, when, in accordance with the agenda paper, I was about to open the discussion on this competition, Mr. Lacy W. Ridge rose and succeeded, on some curious point of order, in shifting the discussion, and sending back the clock of the Institute fifteen years.

In this supreme effort to bring back the Institute to its old character of a Mutual Admiration Society, Mr. Ridge, it should be known to the profession at large, was vigorously and ably supported by Mr. Charles Barry and Mr. Octavi Hansard.—I am, &c., WM. WOODWARD.

7, Duke-street, Adelphi, W.C., Nov. 19.

SWEDISH FONTS.

SIR,—I have only just seen the BUILDI NEWS of October 24, with the interesting seri of sketches of Swedish Fonts, by Mr. Taven Perry. I am very glad to learn that ancient for in Sweden are cared for and safely preserved museums. Here in England they often g placed on lawns as receptacles for geraniums, &c or are put to even more ignoble uses.

I have long been interested in the subject fonts, and as I have notes of many Swedi examples, possibly your readers may like a sho account of some of them.

Skredswik, sketched by Mr. Perry, was figur by M. G. Brusewitz in "Elfsyssel" (p. 32 published in 1864. The following is a transl tion of his account of it:

In the tower-room (of Skredswik Church) preserved an ancient baptismal font, but it is bad condition, and of clumsy workmanshi I have been only able to see and make a drawing its one side, which, as I opine, represents the drago at Babylon, and the princess who was to be ca to it. Holmberg, in his time, was only able get at the opposite side, which he describes follows: "The font represents the figure of woman (St. Catherine?) lying on a saw, or oth dentated instrument, upon which two men a pressing her down with pikes (?) (*Handspake*. Above you see a human head, carefully examinin something above the prostrate figure. On th other three sides of the basin are figures of Saint On the base a human figure recumbent and dragon."

Kareby, sketched by Mr. Perry, is also figure by M. Brusewitz in "Elfsyssel," pp. 91, 9 All four sides are given, the runes slightly vary ing from Mr. Perry's version. They are on band in the centre of one side of the bow occupying about a third of its width. Abov them is a floriated scroll, and beneath them a interlaced ribbon ornament. The third side this font is ornamented with a scroll-like patter below which stand two animals facing eac other, with protruding tongues. The fourt side is occupied by a tree-like ornament wit four branches on each side, terminating i trefoils.

Prof. G. Stephens reads the runes thus:—"Rede sa as can owns me nor church—las gare in acre," and conjectures from them that this for was originally made for the church at Nor, nov Norum.

Mr. Brusewitz figures a font from Norun Bohüslan, which is also now in the Nationa Museum at Stockholm. It is similar in shape t the Kareby example; but the ornamentatio differs considerably. On one side is a figure c a man with his arms tied behind his back, wh seems to be standing on a harp; he is surrounde by four serpents, and above these figures i incribed in runes "Sven made" (the font) The second side bears a bold interlaced ribbo pattern, the third a scroll-like pattern, and th fourth two Latin crosses under arcades.

In the South Kensington Museum are full sized casts of three fonts, the originals of whic are now in the National Museum at Stockholm The beauty of their workmanship is very great and well worthy of notice.

The first of these came from Gällstad; it is o square shape, and is inscribed in runes, whic have been read: "Andreas made the bowl." Abov this inscription is a curious ornamentation o five grotesque heads, placed alternately in natural and reversed position. On one side o the bowl are a lamb and flag and an eagle unde arcades, and the whole of the rest of the font i covered with diverse patterns very similar i design to those on the cross at Gosforth, Cum berland. A cast of this cross is placed nea these fonts in the South Kensington Museum, s that it is easy to compare them. (The numbe of the cast of the Gällstad font is 1885, 200.)

The second font of which there is a cast (Soutl Kensington, 1885, 201), is of very differen design; it is of circular form, and stands on circular base, ornamented with large grotesqu heads of massive appearance; the bowl has graceful pattern of foliage-like ornament carved on it. The third font (South Kensington Museum 1885, 202) is also of circular form; the bowl i ornamented with animals standing under arcades they are placed face to face, and have long pro truding tongues. The lower part of the bow

and the stem is covered with elaborate patterns of scrolls and foliage combined.

In "Elfsyssel," p. 192, Mr. Brusewitz figures a very beautiful font at Björland; the bowl has in the centre a crowned head, from the mouth of which proceeds a scroll-like pattern. It has a peculiarity which Mr. Brusewitz thus describes:—

"In Björland's church there is an ancient stone font 39in. in height, 27in. in diameter above, which is distinguished by an unusual feature, and one which I have hitherto met with only in the font of the neighbouring Säfve—viz., a little vessel placed in the base loosely, so that it can be taken out. As regards the purpose of this vessel, it might possibly have been intended to hold the consecrated water, for though, of course, the baptismal water was consecrated, we find in certain ancient laws a prohibition against 'taking from the font'—*i.e.*, dipping the finger-tips into it, as in other consecrated water. It is also possible that it contained the salt which it was an old custom to put into the child's mouth; but in this case I do not understand why it should have a hole in the bottom."

In a paper entitled "Bohuslänska Dopfuntor," published in 1878, Mr. Brusewitz has, at p. 14, figured the Säfve example. It has a circular bowl ornamented with a bold curving pattern. It stands on a round stem, at the base of which is a small basin-like vessel, which, however, does not appear to be movable; this basin is ornamented with a leaf-like pattern. On page 13 of the same paper is a sketch of a font at the church of Uklums of very similar shape to the one at Säfve, but it has no secondary basin. On page 11 is figured a fragment of the round bowl of a font at Valla; this is ornamented with a very bold design of four interlaced ribbons.

In 1887 Professor Dr. L. F. A. Wimmer published a small folio on the curious font in the Island of Bornholm, and figured it and five other Scandinavian fonts—viz., those of Bjersjo, Soder, Viddinge, Sallerup, Brendum, and Skyum, all of them inscribed with runes. I suppose, however, the earliest-known Swedish font is that from Ottrava, Sweden, of which Professor G. Stevens published an account in 1878, entitled "Thunor the Thunderer, carved on a Scandinavian font of about the year 1000."

Two fonts of Scandinavian origin exist in England—one is at Bridekirk, Cumberland: it has been figured many times in archæological books, and a full-sized cast of it is in the South Kensington Museum, close by the Swedish casts. It is inscribed in runes, which have been read thus:—

"Richard he me i-wrought,
And to this mirth (beauty)
Gern me brought."

In the lower corner beneath the inscription is the figure of the sculptor (Richard?), with mallet in hand, and I would observe that the figure on the Ottrava font, which Professor Stevens considers to be Thunor, with mallet in hand, bears so strong a resemblance to this figure on the Bridekirk font, that I think it may also possibly be meant for the maker of the font.

The second English example was found at Bingley, in Yorkshire. It is inscribed with runes which have been read in several ways, and it is doubtful if it has been the font or the socket of a cross. It has a hole or drain, and Professor Stephens reads one of the words as dip-stone, which would seem an equivalent to the Swedish *dop funt*.

In "Runic Monuments," by Professor G. Stephens, Vol. II. pp. 654-5, is figured and described a curiously inscribed Scandinavian font from Barse, Sealand, Denmark, the bowl is of circular shape and "is divided by simple pillars into sections 10in. broad, all but one which is 14in. Three of these contain the inscriptions, the others have leaf ornaments" (geometrical designs).

"All the work is a rough risting on the stone, and is not in relief."

"The letters are twofold—first two lines of Roman Gothic, and then the Scandinavian Futhork, 19 runes.

"'+ BONDO FRISO ME FECIT ESGERVS ROT HOC (or perhaps) HOCCE FECIT FIERI.

"'Bondo the Friser (Frislander) me made.

"'Esger the Red this let make.'"

This is followed by a row of runes, the "Runic Scandinavian staverow." The forms of some of these runes are unusual.—I am, &c.,

EMMA SWANN.

Walton Manor, Oxford, Nov. 10.

WOOD PAVING IN LONDON.

SIR,—Anent your notice a few weeks back of Jarrah-wood paving in Oakley-street, Lambeth, it may be of interest to note that the New Cut at the present moment is being paved with wood, all as far as the back entrance to the Lambeth Baths being done with Jarrah wood, and from there to the Westminster Bridge-road laid in ordinary yellow deal.

As the foundation is exactly the same, this should be an excellent test. There are no turnings at the point where the different woods join, so it is obvious that exactly the same traffic must pass over the one as the other.

Another very good experiment in Jarrah wood is going on now in the same parish, for while Westminster Bridge is paved with creosoted deal, that portion of Westminster Bridge-road from the foot of the bridge to York-road is laid with Jarrah wood. The Stangate and Belvedere-road take a portion of the traffic from the bridge; yet Westminster Bridge-road is much narrower, and the proportion of traffic to width of road will be found to be about the same in both cases, slightly heavier on the Westminster Bridge-road—that is, on the Jarrah wood. Both these pavings were laid in May last year (1889), at exactly the same time.—I am, &c.,

Norwood, Nov. 18. C. ANSELL, Jun.

CHIPS.

A gymnasium added to the Y.M.C.A. building in Ogle-road, Southampton, was opened on the 13th inst. It has been built by Mr. A. Doggrell, from plans by Mr. W. H. Mitchell, of Southampton, from whose designs the main building was erected five years ago.

The opening meeting of the session of the Royal Meteorological Society was held at 25, Great George-street, Westminster, on Wednesday evening, when the president, Mr. Baldwin Latham, delivered an address on "The Relation of Ground Water to Disease."

Eldon Wesleyan Chapel, Woodhouse-lane, Leeds, was opened last week. The chief contractors were Messrs. Myers, and the architect was Mr. G. F. Danby, of Leeds. The building is in the Gothic style, and will eventually have a tower and spire. The interior has been entirely fitted up in pitch-pine. There is a gallery at one end, and it is proposed to have side galleries at some future time. The chapel has cost up to the present time about £8,000.

A Local Government Board inspector has reported to the Birkenhead health sub-committee that, in his opinion, the present Infectious Diseases Hospital is not adequate for the requirements of a town of the size of Birkenhead. The sub-committee have recommended to the town council the erection of a new hospital.

New National (R.C.) Schools situated on the Green, at Cashel, were opened on Tuesday week. The contractor was Mr. Patrick O'Brien, of Cashel.

The new transept which has been added to Iwerne Minster as a memorial to the late Lord Wolverton was consecrated last week by the Bishop of Salisbury. Messrs. Bayne and Co., of Westminster, were the builders.

During a discussion by the Croydon Town Council on the epidemic of diphtheria, now prevalent in that borough, Dr. Alfred Carpenter, who is a member of the council, attributed the outbreak to leakage from faulty house-drains, which have lost their accuracy of delivery through being made upon the mere ground without a bed or coating of concrete, and in too close proximity to trees. Until these are remedied, he predicted that similar outbreaks will occur.

Professor Ewing, of University College, Dundee, has been elected to the professorship of Mechanism and Applied Mechanics, vacant by the resignation of Mr. James Stuart, M.P. The value of the professorship is £700 per annum.

A number of labourers' cottages have just been built in Dundalk and Ardee Unions, from plans by Mr. Cahill, C.E. The buildings cost about £150 each, and include a kitchen and two bedrooms. The members of the two boards of guardians by whom the works have been carried out, formally inspected the cottages on Wednesday week.

An inquiry was held on Tuesday at St. Mary's Hall, Coventry, before Colonel Walter Mardon Ducat, R.E., one of the inspectors under the Local Government Board, into an application of the City Council to borrow £1,560 for the purchase of Mr. Dalman's property for the extension of the municipal buildings.

Mr. Glenister, head of a well-known firm of chairmakers at Wycombe, has been re-elected mayor of that borough.

Intercommunication.

QUESTIONS.

[10438.]—**Deep Well Pump.**—Could Mr. W. P. Buchan or any of your numerous readers inform me as to best pump for a well 70ft. deep, with a side draught at surface of 15ft., the mode of construction, and the approximate cost?—COUNTRYMAN.

[10439.]—**The Painting of Asphalte.**—I am the possessor of an asphalte tennis-court in the open. When first laid, seven or eight years ago, it was of the usual dark slate colour, very pleasant to play upon, but got rapidly very much lighter by the bleaching action of the elements. This interfered so much with the sight of the balls, which soon become soiled and grey in London, that I cast about for some means of restoring the original colour, but without success. None of the asphalte companies could help me at all; but at last a chemical friend suggested a solution of pitch in naphtha. I have tried this, but it will not do. It is very difficult to put on evenly, because the naphtha evaporates so rapidly; and it thus makes a streaky job, and soon wears off. I dare say others have the same trouble, and if anyone can tell me of a suitable painting material, I shall gladly see it made public. The asphalte people say it must not contain either oil or turpentine, as these would injure the asphalte. My court is laid with Val de Travers mastic. The paint must not be shiny, but flat; it must not make the surface slippery, and it ought to last in good condition for several years. I think the best colour would be a darkish neutral tint; or the colour of asphalte when just wet all over. I am having a number of 4in. squares of asphalte made, on which I can try the material in case any makers send me samples of what they recommend. I shall be much obliged for information.—J. M., 5, Victoria-street, Westminster.

[10440.]—**Sanitary Institute.**—I am anxious to pass exam. as assoc. of above. Would some kind reader give me a little information about same—1st, how to proceed; 2nd, what books required; 3rd, is it very difficult?—E. O.

[10441.]—**A.S.I.**—Can any reader say what books are best to study in order to qualify for Associate of Sanitary Institute.—QUARO.

[10442.]—**Public Health Act.**—Under section 158 of the Public Health Act, urban authorities are to give notice of approval or disapproval of plans within a month. After the expiration of 28 days, can they disapprove of the plans and summon the builder if he carries out the deposited plans? I believe a case dealing with this point was tried some years ago, but cannot trace it. Can any reader enlighten me?—J. T. M.

[10443.]—**Down-draught to Chimneys.**—Can any reader give me advice how to cure the following? Two projecting fireplaces with stacks well above roofs, built on the outside walls of a house, smoke very much, caused no doubt by down-draught, as to make the rooms almost uninhabitable. The back of fireplaces and flues up to roof are built of 9in. brickwork, and the flues are curved. I have tried all sorts of experiments, such as cowls, high pots, hoods over flues, air gratings, &c., but all seem of no avail. I am now thinking of cementing the projections and shafts. Any advice how to cure the defect will be most acceptable.—ENQUIRER.

[10444.]—**Decoration.**—Will some reader kindly give me some ideas for colouring and painting of rooms, say, for a dining-room, 14 by 17, and drawing-room, 16 by 13—what colours to put to harmonise on walls and ceilings with colours for woodwork?—E. B.

[10445.]—**Brickmaking.**—Would a correspondent kindly inform me which is the best method of constructing drying shed, also what super. area of flooring can be heated by the exhaust steam from an 8H.P. steam-engine?—ENQUIRER.

[10446.]—**Fireproof Flooring.** — Will someone, who is thoroughly acquainted with the construction of these floors, tell me if in constructing a floor with rolled joists at 15in. or 18in. centres and a thickness of 7in. of concrete, assuming the bearing to be 20ft., whether there is any recognised percentage to allow for weight carried by concrete; or if the weight the floor has to carry should be calculated upon the iron joists only? I have ascertained that it is not usual to consider the concrete as a weight upon the joists, because it is assumed that it carries its own weight; but I cannot find anyone who can tell me how much it adds to the strength of the floor. Also, I should like to know if 4½in. by 3in. iron joists are sufficient to carry a load of 10cwt. per yard super.?—L. J. H.

REPLIES.

[10430.]—**Surveying.**—I have never heard of any book restricted to town surveying. The best and most modern work on surveying with which I am acquainted is Usill's "Practical Surveying" (Crosby Lockwood), which is, as its title implies, a really practical book, and contains excellent instructions for town surveying and the computation of areas. It is easily understood, and not expensive.—NEVILLE DAVIS.

[10430 and 10434.]—**Surveying.**—The best book on this subject is undoubtedly Usill's "Practical Surveying," published by Spon.—G. A. T. MIDDLETON.

[10433.]—**Wet Rot.**—In all cases where damp soils are covered over with joists and boarded, the soil should be first levelled and well rammed, then covered with, say, 2in. in depth of concrete, and then apply ½in. thickness of Claridge's patent asphalte. This would be found a "perfect cure" to "Z.'s" complaint.—S.

[10433.]—**Wet Rot.**—It is difficult to advise you, considering the meagre information you give. Are you sure the timber was sound and free from sap when put in? I need hardly say that all the walls (including sleeper walls) must have proper damp-proof courses below the level of joists, and the surface of ground between them should be covered with a layer of Portland cement concrete. If the ground level outside the building is above the damp-proof course under joists, the outer face of

external walls should be protected in some way from the damp soil in contact with it. The ends of joists are better not built tight into the external walls, but should be kept from contact with the mortar and damp brickwork, and exposed to the air, either by resting on oversailing courses or otherwise.—N. D.

[10434.]—**Surveying.**—See answer to 10430. On page 167 of Usill, instructions—which should be quite full enough for any student of ordinary intelligence—are given on the question of details. Do not confine your attention to the chapter on Town Surveying, but read up the whole subject, as the most important points are common to both field and town surveying; and remember that proficiency is not gained without much outdoor practice, and the exercise of a considerable amount of judgment.—N. D.

WATER SUPPLY AND SANITARY MATTERS.

The Condition of the Thames.—Mr. Alexander R. Binnie, the chief engineer to the London County Council, and Mr. W. J. Dibdin, the chemist, having inspected the river Thames, have issued a report to the Council. The engineer and chemist stated that above bridge the quality of the water is good. Downwards, on a falling tide, below bridge and as far as Limehouse, the water was as good as they had often seen it in the Thames above Teddington. Downwards from Greenwich it became discoloured in places in rounding bends of the river, although the main stream was fairly clean. In the neighbourhood of the Woolwich Ferry it was also discoloured, and considerably so off the Barking and Crossness outfalls. Returning on a rising tide, they were able to trace the discoloration almost as far as the Tower, but in no case was any smell, except slight effluvia near Woolwich, perceptible. The banks and foreshore of the river were, comparatively speaking, remarkably clean and free from muddy deposit. They are not inclined to attribute the discoloration which they did observe to any sewage matter recently poured into the Thames, but rather to the accumulation in its bed of deposits of former years from various sources, as well as those due to the main drainage works. Among the former are the discharge from the river Lea and the various docks on the Thames. On the whole, they consider the river to be improved by the works carried out during the current year, and which was to be expected, as some 366,300 tons of sludge have been sent to sea since the 1st of January; and when the Crossness works are brought into action, a still further improvement will be the result.

CHIPS.

Mr. Rowand Anderson, LL.D., architect, of Edinburgh, has received from the jury of the Munich Annual Exhibition a gold medal for his design for the National Portrait Gallery and Museum of Antiquities, Edinburgh. On the obverse side of the medal is a seated figure of Minerva plucking an olive branch, the background being the façade of a Greek temple. On the reverse side is a wreath of olive with a small panel containing the name Rowand Anderson.

The Court of Queen's Bench decided on Friday the application for a mandamus to compel the Bishop of London to hear a representation of the parishioners concerning the reredos at St. Paul's. Mr. Justice Stephen thought the parties were entitled to a mandamus. Mr. Justice Hawkins thought they were not, and as he was senior judge his decision was final, and he ordered the rule to be discharged, without costs.

A new mission church at Pease's West, in the Crook parish, was formally opened on Wednesday week by Dr. Westcott, Bishop of Durham. The building is a stone structure, will accommodate 250 persons, and cost about £600.

The section of the new extension of the Midland Railway system between Saxby and Bourn, Lincolnshire, is now in active progress. Two shafts have been sunk in connection with the tunnelling of Stamford Hill. Several miles of the line are already constructed near Wymondham, and at Bytham active progress is being made. Messrs. Mousley, of Manchester, are the contractors for this section.

The funeral of Mr. William Ford, J.P., of the Holyrood Glassworks, Edinburgh, took place on Friday, the interment being made in the graveyard of Canongate Parish Church. The funeral was largely attended.

A meeting of the district council of the National Registration of Plumbers was held in the University College lecture-hall, Cardiff, on Saturday, Mr. E. Seward in the chair. Lord Aberdare attended and distributed the certificates awarded by the Council during the year to those plumbers residing in the district who had successfully passed the annual examination. Lord Aberdare delivered an address on the value of technical instruction in all professions. Mr. E. Smith, of the Worshipful Company of Plumbers, London, spoke on the advantages arising from a federation of competent workmen.

LEGAL INTELLIGENCE.

Ex Parte Lodge—in the Matter of the Kirkheaton Local Board.—This action, heard in the Queen's Bench Division on Monday, before Mr. Justice Stephen and Mr. Justice Vaughan, raised for the first time the question whether an inhabitant ratepayer, owner, and occupier of a residence within the district of a Local Board can have *mandamus* against the Board to compel them to exercise their powers under the Public Health Act, 1875, for the purpose of providing proper sewerage and drainage. Though these powers have been in force in one form or another for half a century, no case has arisen in which a *mandamus* has been allowed in such a case; but as there was a *dictum* of Lord Justice James to the effect that this was the proper remedy if a public board refused to exercise their powers, the Court, after some hesitation, granted a rule *nisi* to have the question argued and determined, and if the *mandamus* is granted it will be a most important precedent. Mr. Lodge, the applicant, is owner and occupier of a residential property within the district of the Kirkheaton Local Board, near Huddersfield, and a ratepayer; the site is on a rising ground. A natural stream runs through the property down into a stream bounding the district. The affidavit on applicant's part showed that sewage was poured into the stream which runs through the applicant's property, and so produced a pollution of the stream injurious to health. Applications had been made to the Local Board to remedy the grievance, but they declined.—Mr. Cook, Q.C., now moved for a rule *nisi* for a *mandamus* to the Board to keep in repair all sewers belonging to them, and cause to be made such sewers as may be necessary for the effectual draining of the district. In "Glossop v. the Heston Local Board" it was said by Lord Justice James that in such a case where a public board refused to exercise their statutory powers a *mandamus* was the proper remedy. He cited also "The Attorney-General v. Dorking."—A rule *nisi* was granted.

Brasier v. Shepart.—This was an action tried before Judge Molyneau, at the Redhill County Court, on November 12, to recover the sum of £16, being extras claimed upon building a house for the defendant by contract. It would appear that the amount claimed consisted for the most part of sums disallowed by the architect, Mr. Frederick Rogers, of Bromley, being in his opinion not justly due to the plaintiff; these amounts were therefore specially mentioned in the final certificate. His Honour, having read the contract, which contained the usual clause that the architect should be sole judge of the value and quality of all material and labour used in the erection of the building, characterised the action at once as an attempt to set aside the award of an arbitrator whom both sides had appointed, and pointed out that such award could not be set aside unless fradulent practices could be alleged against the architect as arbitrator. The plaintiff then agreed to accept a nonsuit, with costs, against himself.

London Board School Contracts.—School Board for London v. Wall Brothers.—This case, which was heard by Mr. Justice Day and a special jury, was concluded on Tuesday. It was brought by the London School Board against a firm of builders to recover damages for alleged breach of contract in respect to the building of a school in Kilburn-lane, N.W. The defendants denied the alleged breaches; but said if there had been any deviations from the contract, they were made by the orders and direction of the clerk of the works in the employ of the plaintiffs. Sir Henry James in opening plaintiff's case, said that on August 15, 1884, defendants contracted with the board to build the Kilburn-lane schools for a sum of £17,397. One of the conditions in the contract was that "no final or other certificate shall, under any circumstances, cover or relieve the contractor from his liability for any fraud, default, or wilful deviation from this contract and the works described in the drawings and specification; but he shall remain responsible for four years from the time of completion of the works for such fraud, default, or wilful deviation and for the consequences thereof." The schools were completed in August, 1885, and the architect gave his certificate. Three years later, however, while some pipes were being repaired under the playground it was discovered that instead of there being a "6in. layer of hard, dry, well-rammed débris" under the tar paving, there were only clay, ashes, and burnt ballast two or three inches deep. The result of this discovery was that the whole premises were overhauled, and it was found that inferior mortar and concrete had been used, that mortar had been substituted for cement, that drain pipes had been improperly jointed, and that in the foundations the lower strata of concrete were soft and not of as good a quality as the upper strata. Other deviations were discovered as to the tiles, roof-timbers, laths, and lead gutters. In fact, the whole building was found to have been in many places scamped, and £5,000 would be required to put the schools into some sort of order. Mr. W. H. Strudwick, surveyor to H.M. Board of Works and War Office, who had been called in to report on the state of the schools, gave evidence as to the matters complained of, and the probable cost of putting them in good order. He put the general depreciation in value of the buildings at £2,000. Mr. E. R. Robson, F.S.A., late architect to the London School board, denied having given defendants any authority for the deviations made from the specifications. A Mr. Coombes, since deceased, was inspector under him, and should visit and report to him any reports from clerk of works at the schools. Coombes had no authority to allow any deviations whatever. Cross-examined: He had never personally visited the schools until they were completed, and then only to gather ideas for future schools, and not to examine the work done; but he had given his certificate on the report of others.—Mr. Bradfield, an assistant architect to the School Board and others, gave confirmatory evidence as to the quality of the materials used.—Mr. Channell, Q.C., in defendants' behalf, relied on the fact that the late Coombes had given defendants his authority to do all they had done. He practically acted as the architect, as Mr. Robson did not appear to have taken any part in the building of the schools. If the defendants had followed Coombes' instructions, it could not seriously be contended that they had been guilty of any fraud, default, or wilful deviation, unless it were suggested that there was collusion between Coombes and the defendants. So far from defendants having made large profits out of the building of these Board schools, there had been none; they being, in fact, bankrupts.—Mr. H. H. Bridgman and Professor Banister Fletcher, architects and surveyors, gave evidence in support of the defendants' case as to the quality of the mortar and concrete used, and as to the thickness of the layer below the playground. It was not unusual or improper to use ground bricks in the mortar, or to put marble chips and bricks in the concrete. The soft mortar between the bricks was due to the effects of the weather, the defendants being obliged, by their contract, to leave the "pointing" of the walls until the buildings were finished.—Mr. George Wall, the defendant, and his son, who had actually been in charge of the works, having been called, witnesses were called from Messrs. Hobman's, who had laid down the tar paving in the playgrounds, to prove that they had found a proper layer of *débris* to work on. They had not, however, tested it to see what the thickness was. Mr. Jefferson, late clerk of the works to the Board at the Kilburn-lane Schools, was called, and said that while he was engaged there he had three other schools to look after in a similar capacity. In fact, when he left he had seven other schools to attend to. The result was that these schools were practically without supervision. When he had a chance, he examined anything which might be going on. He had occasionally looked at the mortar and concrete. He did not see much harm in stone chips or bricks being put into the mortar-mill, as, when ground, they made very good sand. When the playground was being rolled he was occupied with another school, so he did not examine the thickness of the layer of *débris*, though he should think it must have been 15in. in places. The use of burnt clay in the mortar was against his instructions and the specifications.—Mr. Justice Day, in summing up, said that the real issue for them was, Had there been any deliberate violation of the terms of the contract by the defendants? The contract contained conditions, some of which he had never seen before. One condition of the contract was that the contractor should remain responsible for four years from the completion of the works for fraud, default, or wilful deviation from the contract. The first two words were well understood in courts of justice, but "wilful deviation" was more vague, and he understood by it a deliberate violation of the contract—not a mere oversight or mistake. To require the defenants to pull down the schools and rebuild in accordance with the specification would be unreasonable: it would involve penalties of a too outrageous character. Where the defects could be remedied, the plaintiffs were entitled to the expense of remedying them. With regard to non-compliance with the contract as to portions of the building which could not be remedied—as, for instance, the foundations and the mortar and cement used—the plaintiffs were entitled to whatever profit the defendants had put into their pocket by using inferior materials. Then, when the defects were remedied as far as they could be, a question would arise whether the building would be of the same value as it would have been if the contract had been complied with. Having regard to the system which existed, he made no reflection on the management of the London School Board; but having regard to the way in which the business of the architect's office was transacted in 1884-5, he thought the defendants had not taken advantage of opportunities which, to his mind, were opened to them by the School Board. It was scarcely conceivable that a public body should have conducted its business in such an extremely lax manner as they did conduct it in those years. They had an architect who actually told them that from the time he prepared the plans he never went near the school until it was completed, and then he went, not to

see whether the building had been properly built according to contract, but for a purpose connected with his own education—to study the plans, with a view to designing future schools. And who represented the interests of the School Board? They had before them the clerk of the works. He made no imputation on him: he was, no doubt, a most excellent clerk of the works; but what had he to do? At the time he had no less than four schools under his supervision, one being at Walham-green and another at Bow. At the time he left the Board, so satisfactorily had he discharged his duties, that the Board had actually intrusted him with seven schools. Every possible temptation was thus presented to the builders and their servants to take a liberal view of the specification in their own favour. It was true there was somebody else, now deceased, who was said or supposed to have authorised a great many things that were complained of. Coombes, who was an inspector, was to overlook the work in the place of the architect, and it was said he authorised these things. He, however, excluded what Coombes had said on the subject, not because he was dead and could not be called to contradict, but because there was no evidence whatever to show that he was in the position of the architect, or was authorised by the Board to sanction deviations from the contract. No doubt this action might be said to be a bad speculation on the part of the Board, as the defendants were bankrupts; but the Board were justified in bringing it because they wished it to be understood that if contractors violated their contracts, they should not do so with impunity. The jury returned a verdict for the plaintiffs, damages £2,141. The Foreman: The jury desire, without absolving in this case the defendants, to express their strong condemnation of the state of things in the architect's department disclosed by this inquiry. Judgment, with costs, was accordingly entered for the plaintiffs.

Important Sanitary Prosecution.—At Marylebone police-court, Mr. Cooke has given his decision in the case of the "Vestry of Paddington v. Hunter," argued by barristers a few days since. It was a summons by the Vestry of Paddington against Mr. H. Hunter to recover a penalty under the 7th section of the Metropolitan Local Management Act of 1855, and the Amending Act of 1862, for not having obeyed a notice to abolish the present system of combined and defective drainage, and to separately drain his house, No. 148, Westbourne-terrace, Bayswater, into a public sewer recently made by the vestry in front of a block of houses, of which No. 148 was one, and which sewer was made to join and fall into an existing sewer at Orsett-terrace. The facts of the case were in a great measure undisputed. The vestry, the magistrate said, had altered the system of drainage, and had required the defendant to alter his drains so as to fall into the altered and extended sewer. He thought the case strictly came within the 69th section of the Metropolitan Local Management Act, which provided that where the vestry or district board altered any sewer or provided a new sewer, they might construct or otherwise alter the private drains communicating with the sewer so altered, and might close up such private drains and provide drains in lieu thereof. The case of "The Vestry of St. Marylebone v. Viset," was a case in point, where it was decided that it was not compellable to the occupier to make a new drain or bear the cost of constructing it on the ground that the facts brought the case under section 69. He should dismiss the summons; but was willing, however, to grant a special case if desired.

Notices are again out for the Central London Railway scheme, by which, as last session, it is proposed to construct a subway under Oxford-street, from Queen's-road, Bayswater, to the City.

The foundation-stone of a new Roman Catholic school-chapel was laid last week in Fairfax-street, Prestwich, Manchester. The building will cost about £2,000; Mr. Oswald Hill, of Manchester, is the architect, and Mr. Robert Nield, of the same city, the contractor.

Mr. Hopkins gave his decision at the Lambeth Police-court on Wednesday on the summons taken out by the London County Council against the City and South London Railway Company. The point in dispute was whether the Company had the right to build two of their stations as far only as the line of houses, as the Council contended, or, beyond that line, to the end of the gardens abutting on the roadway. The magistrate decided against the Company, but granted a case for a superior Court, the buildings to remain in the meanwhile.

It was announced, at a meeting of the Cork, Bandon, and South-East Coast Railway Company on Wednesday, that the Government proposes to spend seventy thousand pounds in railway extensions at Skibbereen and Bantry, for the purpose of affording employment to the people. The Company approved the grant for fifteen thousand pounds given them to extend their line to the deep water quay at Bantry, to facilitate the fish traffic.

Our Office Table.

Notice has been given, on behalf of a committee representing a majority of the vestries and district boards in the Metropolis, of a Bill to be introduced into Parliament next session dealing with the London water supply. The Bill will propose to transfer the undertakings of the eight water companies now supplying the Metropolis to the London County Council or some other representative body, on terms to be fixed by a board of arbitration, and to empower the new water authority to supplement the existing supply by taking water from Rickmansworth and Leatherhead. It is also intended to insert clauses relating to the rates of charges. The London County Council have referred the subject of the Bill to their Parliamentary Committee, and would, it had been expected, accord active support to the measure. The City Corporation have, however, since given Parliamentary notices for a Bill somewhat similar in scope, under which a London Water Commission would be created, having powers for improving and regulating the water supply, and for securing an independent or alternative supply, as well as the right to purchase existing undertakings. The commissioners to be appointed under the Bill would be representatives of the Corporation, the County Council, and all other local authorities concerned, and of the supply companies and conservancy boards.

The city engineer of Liverpool, Mr. Percy Boulnois, has reported to the sanitary committee of the corporation of that city that the number of insanitary houses in Liverpool at the present moment is no fewer than 16,000. It is roughly estimated that of these not more than 14,000 houses are inhabited; that an average of five persons per house would be a fair computation, giving a total population of 70,000 persons living under conditions highly dangerous to the public health. Some members of the Liverpool Corporation are opposed to any wholesale scheme of demolition unless it be accompanied by a fair and adequate attempt to erect new dwellings for the working classes in the same neighbourhoods, at rentals of about 3s. or 4s. per week. The engineer has been instructed to prepare plans for new dwellings to meet the circumstances.

From Boston, U.S.A., are announced the deaths of two architects of high reputation, both practising in that city, and both natives of New Hampshire. Mr. William Washburn, the senior of the two, had attained the age of 82 years. He began life as a builder, at a time when architects were nearly unknown in the United States, but gradually gave up practical building to devote himself to planning and superintendence. He possessed great natural ability, and was particularly successful in the arrangement of hotels, of which he designed many, the most noted ones being the Fifth Avenue and Victoria in New York, and the Parker House, Tremont, Revere, Adams, Young's, and the American House, in Boston. He also designed the Tremont Temple in Boston, the Charlestown City-hall, and many other public and private buildings. The second death is that of Mr. Charles Edward Parker, who died at the home of his son in Virginia, a fortnight since. Mr. Parker went to Boston when a young man, and had lived and practised there ever since. He was the architect of many public and private buildings throughout Massachusetts, and was for several years superintendent of construction of the Boston Post-office and Sub-Treasury. After the resignation of Mr. M. E. Bell, he was one of the most prominent candidates for his position (which Mr. Parker failed to obtain) as supervising architect to the Treasury Department.

The Darwen town council have decided to purchase the Pickup Bank and Daisy Green reservoir from the Blackburn Corporation for £50,000. The agitation for an increased water supply has now extended over two years, the alternative schemes being a supply from either the Thirlmere reservoir of the Manchester Corporation or the Roddlesworth reservoir of the Liverpool Corporation.

The London, Chatham, and Dover Railway Company are contemplating promoting a Bill in Parliament for a competitive line, viâ Tunbridge Wells, to Eastbourne. It is rumoured that the Duke of Devonshire will support the Chatham and Dover Company in their endeavours to get an independent line from London.

MEETINGS FOR THE ENSUING WEEK.

Monday.—Society of Arts. "Gaseous Illuminants," Cantor Lecture No. 1, by Professor Vivian B. Lewes. 8 p.m.

Tuesday.—Society of Architects. "The Society's Excursion into Kent" (illustrated by oxy-hydrogen lantern views), by G. A. T. Middleton. St. James's Hall, Piccadilly. 7.30 p.m.

Institution of Civil Engineers. "The Vibratory Movements of Locomotives," by Professor J. Milne and J. McDonald. 8 p.m.

Bradford Architects and Surveyors' Association. "Fifty Years of Sanitary Progress," by T. Preston. 8 p.m.

Wednesday.—St. Paul's Ecclesiological Society. "The Abbey Churches of England" (illustrated), by J. Grimshire. 7.30 p.m.

Society of Arts. "Physical Tests in Competitive Examinations," by Francis Galton, F.R.S. 8 p.m.

Friday.—Architectural Association. "Arts and Artists, in Former Times and To-day," by W. H. White. 7.30 p.m.

Architectural Association, 9, Conduit-street, W.—November 28. The 4th Ordinary Meeting, 7.30 p.m. Paper by Mr. William H. White, Secretary of R.I.B.A., on "Arts and Artists, in Former Times and To-day." December 12. The 5th Ordinary Meeting, 7.30 p.m. Special Business Meeting, 7.45 p.m. "To receive the Report of the Special Sub-Committee appointed to revise the Rules, and to make alterations to the Rules."

Fred. R. Farrow, Ernest S. Gale } Hon. Secs.

CHIPS.

The model of his Burns statue for Ayr has just been finished by Mr. George Lawson, and the casting of the bronze will take place immediately at Thames Ditton.

The name of Mr. Thomas Hindle, timber merchant, Browfield House, Baxenden, has been placed on the commission of the peace for the borough of Accrington.

A large block of business premises is being erected in the Hayes at Cardiff, from plans by Mr. J. P. Jones, of that town. It consists of a series of shops and warehouses, with offices and show-rooms above, and also, on the first floor, a Masonic hall 60ft. by 44ft. and 24ft. high.

The reopening of church bells at St. Mary's, Hayes, Middlesex, took place last week. The work of rehanging the bells has been carried out by Messrs. E. and H. Rogers, of Maidenhead, Berks. The recasting of Nos. 1 and 2 was undertaken by Messrs. Warner and Son, London.

Mr. W. J. McKenzie, who had been for thirty-two years employed at York as surveyor in the architect's office of the North-Eastern Railway Company, has just died, at the age of 57 years.

The corporation of Devizes have instructed Mr. Laidlaw to prepare plans for the disposal of the sewage of the town. The estimated cost of the scheme is about £3,250.

A new Baptist chapel has been opened in Deacon-road, Widnes. It has sitting accommodation for about 200 persons, and in addition there are three classrooms at the rear of the building. The building has been erected by Messrs. Sayce and Randle, Widnes, under the supervision of the architect, Mr. Richard Owens, of Liverpool. It has cost £1,250.

Mrs. Pullan, widow of Mr. R. Popplewell Pullan, F.S.A., F.R.I.B.A., and sister to the late Mr. William Burges, A.R.A., died on Wednesday at her residence, 9, Melbury-road, Kensington, the well-known 13th-century house designed by Mr. Burges, and built for his own occupation.

Mr. Lawrence Marr, contractor, of Lodge-lane, Liverpool, died on Sunday. Besides his son, upon whom his business devolves, he leaves a widow and two daughters. Among the many contracts the deceased carried out were the excavations in connection with the Lime-street tunnel, the Exchange Station works, and roadmaking on a large scale under the Liverpool Corporation and various suburban boards.

At the last meeting of the Malmesbury town council applications for the post of surveyor and inspector of nuisances were read from Mr. Jacob Angell (the present surveyor), Mr. Jabez Emery, and Mr. Frank Price. The first two made application on the same terms as advertised—namely, £60 per annum. Mr. Frank Price offered to devote his whole time to the duties for £50 a year, or the whole of the winter and as much as was requisite in the summer for £40 per annum. After some discussion it was decided to issue fresh notices, with the understanding that the person elected should devote *the whole of his time* to the work at a yearly salary of £50! It was resolved to hold a special meeting for the further consideration of this lucrative appointment.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

Audenshaw.—For painting the lamp-pillars, frames, and street name plates, within the district of the Audenshaw Local Board. Mr. J. H. Burton, Ashton-under-Lyne, architect:—
Burgess, J., and Son, Stalybridge (accepted).
(Five tenders were received.)

Barking.—For the erection of a block of buildings in New-street, Barking, for Mr. E. L. Clifford. Mr. J. W. Dunford, M.S.A., 100c, Queen Victoria-street, E.C., architect:—
Barclay, R., Chelsea (accepted) ... £750 0 0

Bradninch, Devon.—For alterations and additions to the Mansion House, for Mr. J. Webber, sen. Mr. W. H. Taylor, C.E., Queen-street Chambers, Exeter, surveyor:
Labdon, Cullumpton £343 0 0
Wicks, W. A., Bradninch 330 0 0

Burnley.—For alterations to engine-house, boiler-house, offices, and alterations to Finsley Mill, Burnley, for Messrs. Witham Bros. Mr. V. Dunkerley, Bank Chambers, Burnley, architect:—
Masons:—

Wiseman and Son	£1,670	0	0
Heap, T., and Son	1,300	0	0
Parker, A. and R.	1,295	0	0
Parker, J. and A.	1,210	0	0
Read and Son...	1,200	0	0
Smith Bros.	1,125	0	0
Smith, T.	1,120	0	0
Laycock (accepted)	1,036	0	0

All of Burnley.

Camden Town, N.W.—For rebuilding the Marquis of Camden, Camden Town, including bar and other fittings:

Pocock, J.	£4,834	0	0
Killby and Gayford	4,404	0	0
Patman and Fotheringham ...	4,394	0	0
Harris and Wardrop	4,320	0	0
Allen and Sons	4,305	0	0
Oldrey, H. B....	4,291	0	0
Mark, F.	4,113	0	0
Gould and Brand	3,943	0	0
Toms (accepted)	3,915	0	0

Chester-le-Street.—For further additions to Chester-le-Street Jamworks, for Mr. J. W. Luccock. Messrs. Plummer and Burrell, Newcastle-on-Tyne, architects:—
Contract No. 6:—
Norman, W. (accepted) £155 0 0
For sundries:—
Norman, W. (accepted) 51 10 0

Colchester.—For alterations and additions to Mr. H. L. Griffin's work and show-rooms in Culver-street, for Mrs. M. Benham. Mr. T. W. Start, F.S.I., Cups Chambers, Colchester, architect:—

Orfeur, C. E.	£570	0	0
Ward, T. J.	538	0	0
Shead, F....	535	0	0
Diss, A.	495	0	0
Dupont, F.	493	0	0
Dobson, G.	488	0	0
Beaumont, R.	469	0	0
Chambers, W. A. (accepted) ...	447	0	0

Colchester.—For the erection of thirteen cottages at Colchester, for the Salvation Army. Mr. W. G. Scott, A.R.I.B.A., 25, Bedford-row, London, W.C., architect:—

Hall, A. J., Brixton...	£3,400	0	0
Everett, H. A., and Son	3,190	0	0
Coe, A., Ipswich	2,867	0	0
Bowles, G. W	2,774	0	0
Purton and Johnson, Greenwich ...	2,700	0	0
Coxhead, F. J., Leytonstone ...	2,597	0	0
Chambers, Leytonstone	2,504	0	0
Dupont, F.	2,375	0	0
Oldridge	2,250	0	0
Dobson, G. W.	2,189	0	0
Dois, A. (accepted)	1,790	0	0
Thoday, F., & Son, Cambridge* ...	1,750	0	0

Rest of Colchester.
* Withdrawn.

Dundalk.—For laying kerbing in Wellington-terrace, for the town commissioners:—
M'Evoy, J., and Son, Dundalk (accepted).

Exeter.—For general repairs, new bath-room, &c., at 12, Belmont-place. Mr. C. Cole, Queen-street Chambers, Exeter, architect:—
Soper and Son (accepted).

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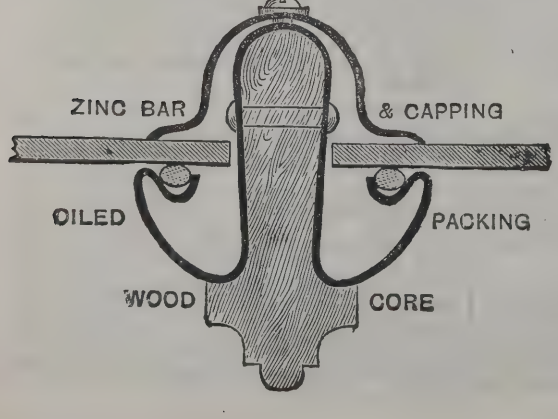
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21, 1890.



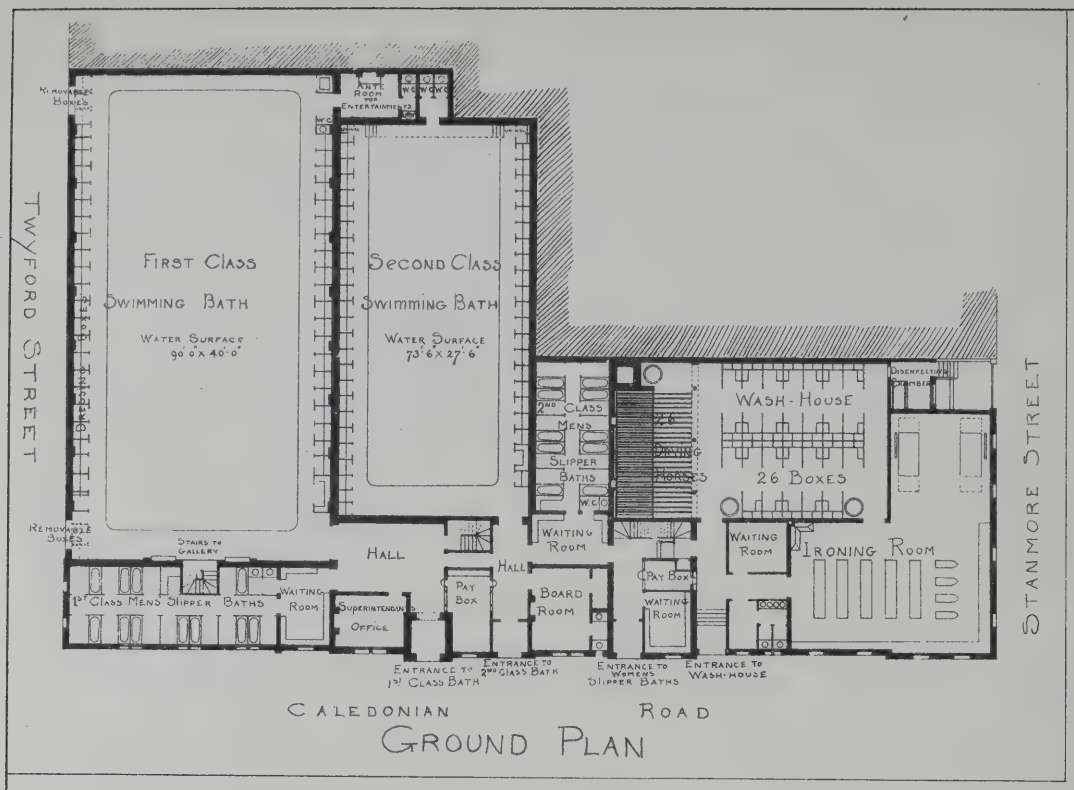
CLEOPATRA



HELEN

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HENRY HOLIDAY


TWYFORD STREET
STANMORE STREET
REMOVABLE BOXES
FIRST CLASS SWIMMING BATH
WATER SURFACE 90'0 X 40'0"
SECOND CLASS SWIMMING BATH
WATER SURFACE 73'6 X 27'6"
WASH-HOUSE
26 BOXES
DISINFECTING CHAMBER
2ND CLASS MENS SLIPPER BATHS
WC
HALL
WAITING ROOM
IRONING ROOM
PAY BOX
BOARD ROOM
SUPERINTENDING OFFICE
1ST CLASS MENS SLIPPER BATHS
STAIRS TO GALLERY
ENTRANCE TO 1ST CLASS BATH
ENTRANCE TO 2ND CLASS BATH
ENTRANCE TO WOMENS SLIPPER BATHS
ENTRANCE TO WASH-HOUSE
CALEDONIAN ROAD

GROUND PLAN


1ST CLASS SWIMMING

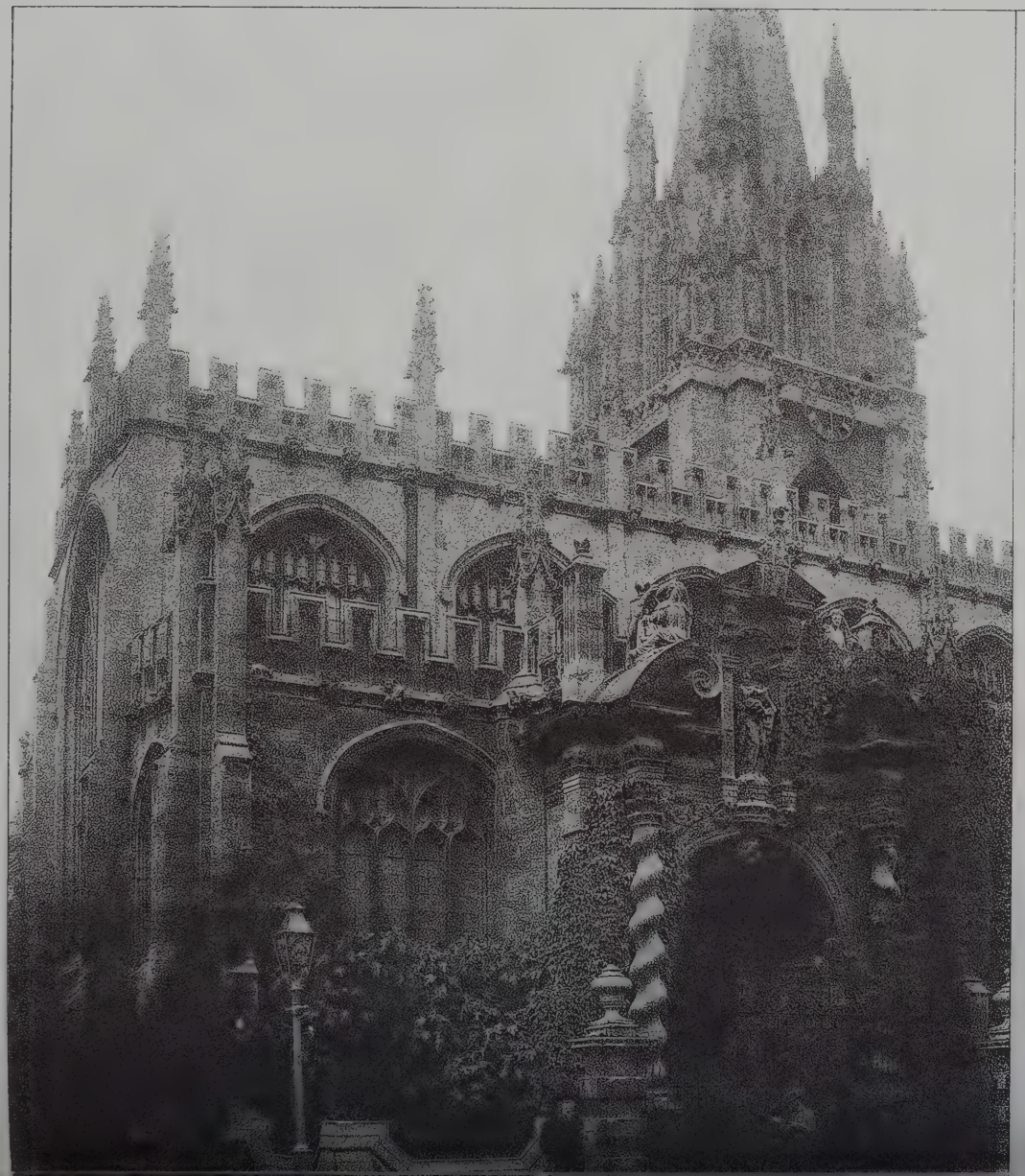
MARY'S · ISLINGTON · PUBLIC · BATHS · & · WASH-HOUSES · COMPETITION ·

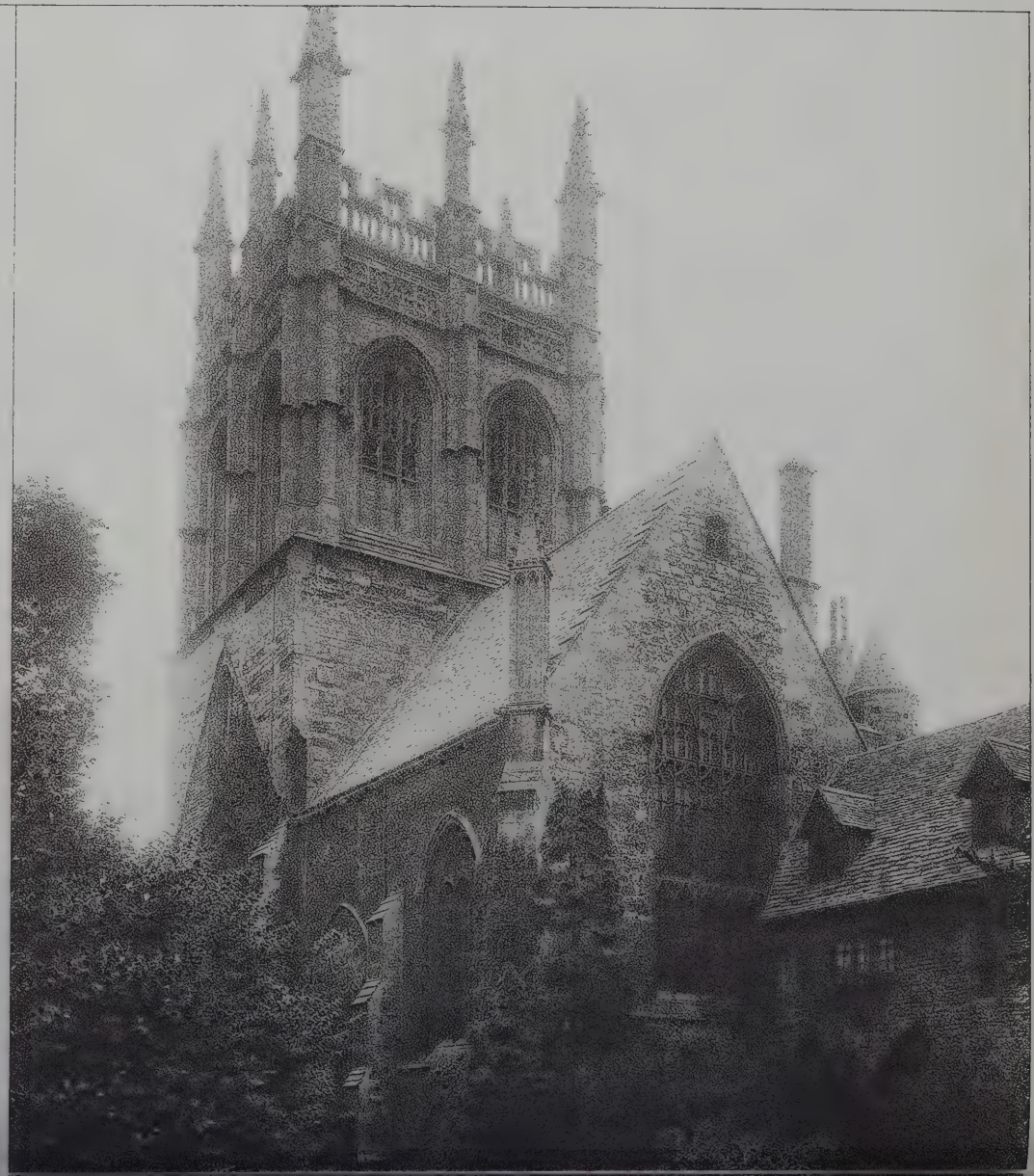
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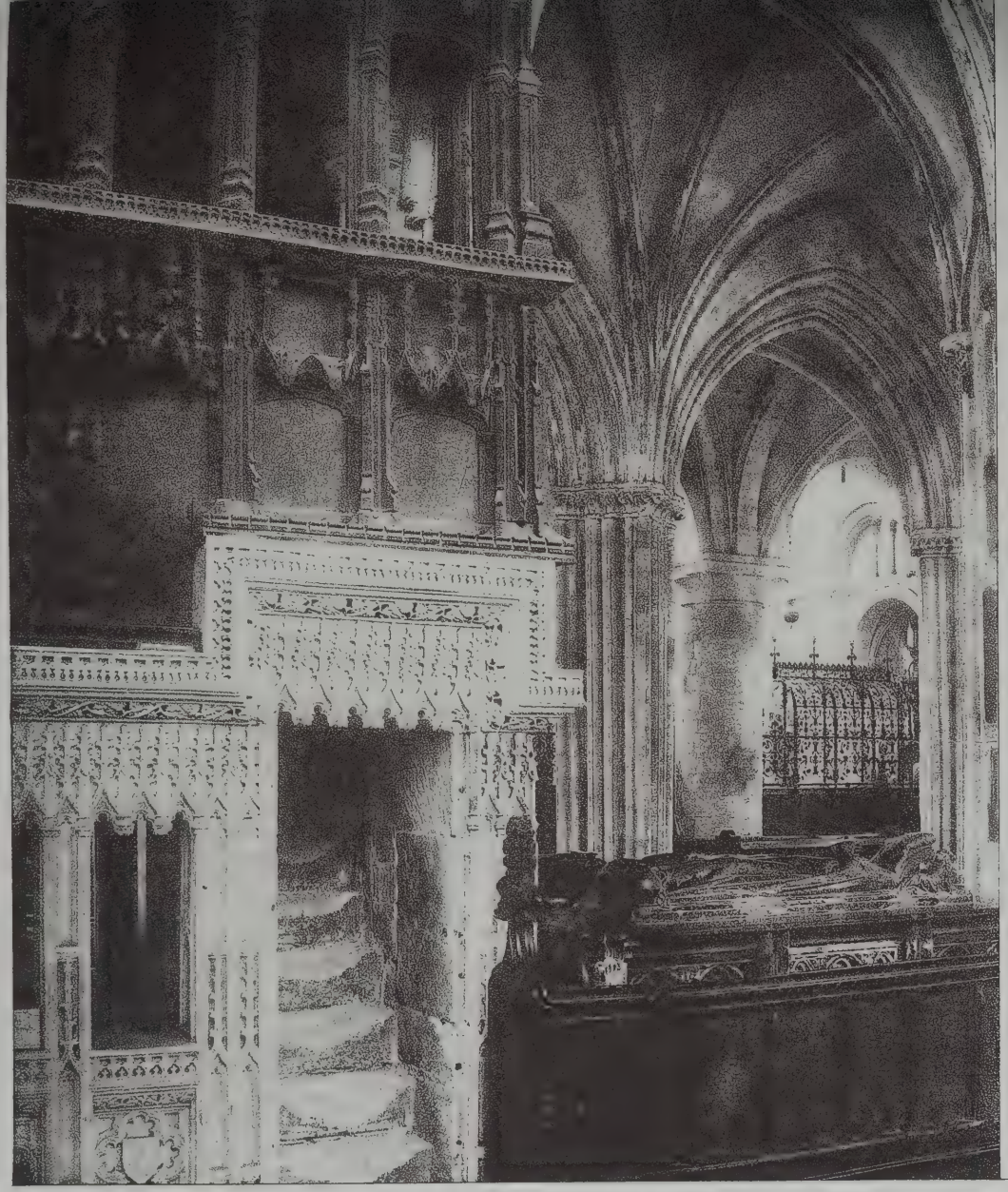


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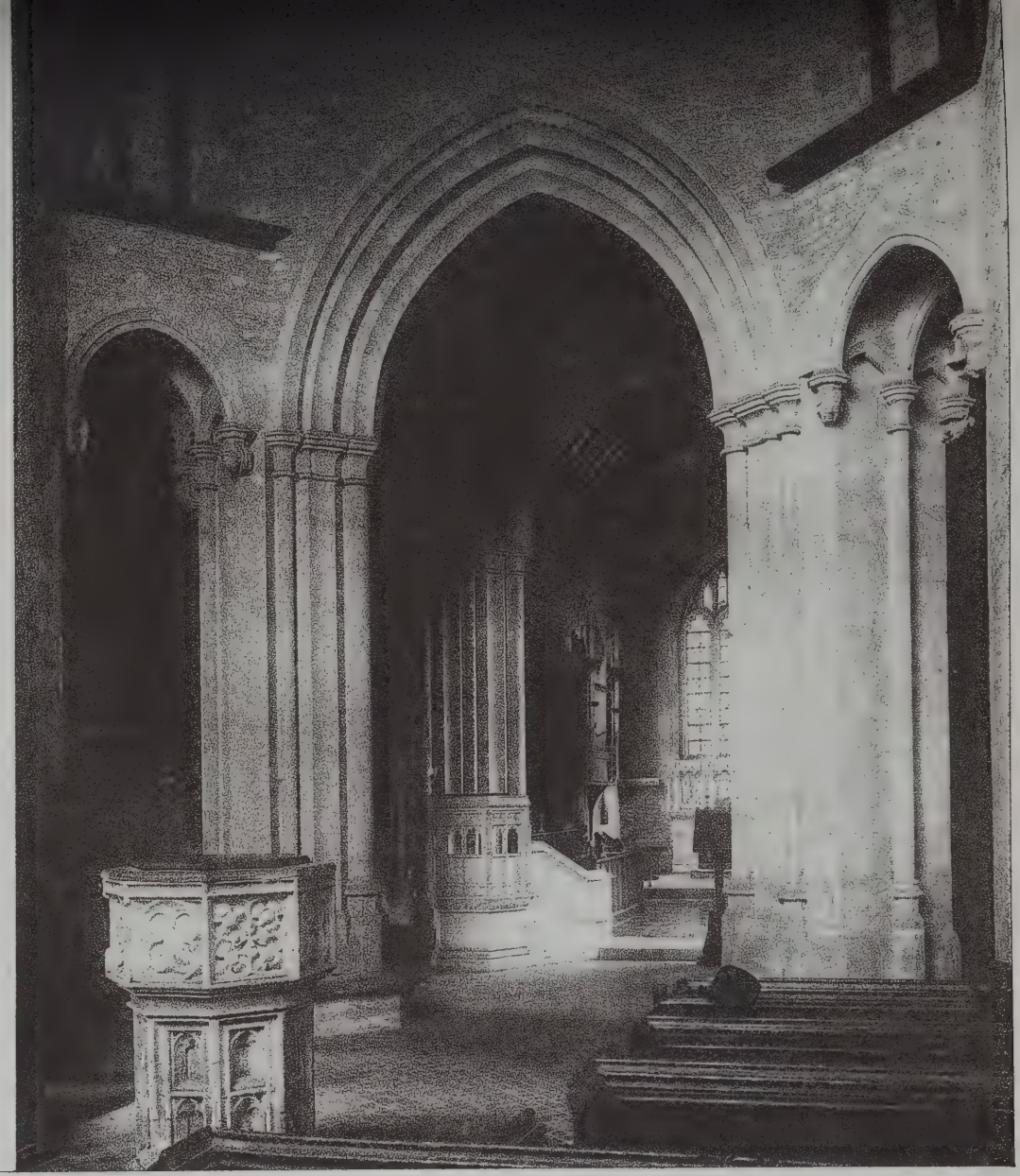

SCULLERY
SERVANTS HALL
DINING ROOM
PORCH
DRAWING ROOM
VERANDAH
KITCHEN
LARDER
BUTLERS PANTRY
LAVY
HALL
HATS & COATS
STORES
TRADE ENTRANCE
UP
YARD
WC
WOOD
COALS
KNIVES & BOOTS
LARDER
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HALL
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CHRIST CHURCH · CATHEDRAL OXFORD ·
INTERIOR · VIEW · LOOKING · FROM · THE · "LATIN · CHAPEL"

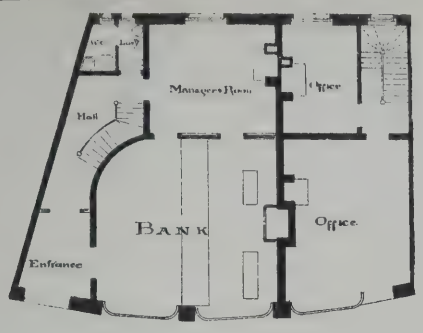


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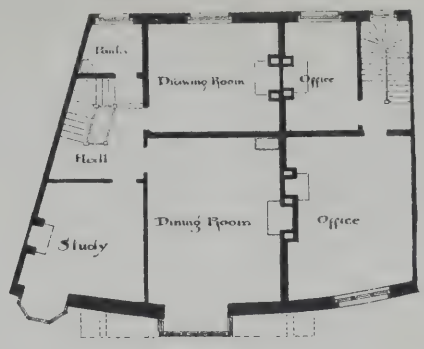
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GROUND PLAN



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E BUILDING NEWS
ND ENGINEERING JOURNAL.
VOL. LIX.—No. 1873.
FRIDAY, NOVEMBER 28, 1890.

E SURVEYORS' INSTITUTION AND TS PROVINCIAL COMMITTEES.

a true appreciation of the real needs of its members, both senior and junior, the eyors' Institution has long taken the of the Institute of Architects, and has n itself more far-seeing and progressive. as not only the first institution to listen e reforms which the present state of the ession demanded, but it has accomplished ng the 22 years of its existence what the tute, with a history of 56 years, has promised, and has yet failed to do. But Surveyors' Institution has gone farther. ouncil, with characteristic wisdom, have seen the desirability of strengthening its ion from the outside, of infusing into Institution new life, and of establish- a closer relationship between provincial bers and the council. For this pur- the system of "Provincial Committees" been framed, the objects of which are in words of the constitution, "To establish stem of succession to the standing com- ees, and, as far as possible, through them he council, on the basis of local selection of services rendered to the Institution; to re a fuller representation of the members n the standing committees; to bring the bers into closer touch with the council, to assist the council in ascertaining their l wants and wishes; to give the country bers an extended influence over the ission of new members from their own icts; to provide machinery for holding l examinations and country meetings of Institution, and for generally increasing interest of all classes of members in its fare." These, it will be admitted, are chief objects for which any professional ety exists at all.

s we shall show, the Surveyors' Insti- on has accomplished these objects. eady 17 provincial committees have been ped out and are in working order, resenting in all over 700 country mem- , and comprising all the counties of land and Wales. Both in conception and ils the scheme of the Institution com- ds itself to notice. While extending the esentation of the profession of surveyor its many special branches, it avoids nomy, and removes the reasons for the tence of outside or local societies. Other essional bodies, like the Institute of ish Architects, have neglected to use their ns, and have abdicated their powers. Its nches and allied societies have till quite ntly remained in local segregation, ob- sly to the weakening of the Metropolitan re, and the regulations and restrictions le by the council have been prejudicial. constitution and rules of these pro- ial societies are subject also to the trol of the council. The branches have, fact, to come into existence or alliance n the Metropolitan body as best they can, to gain recognition by their own influ- e or energy; but the Surveyors' Institu- extends a hand of fellowship: it has ually formed provincial committees, each extensive with a county or portion of a nty, or a group of counties, the members which are all non-Metropolitan Fellows he Institution who practise in the dis- t. Those who practise in the provinces thus have a direct voice in all matters cting them as local practitioners; those, act, who live outside the Metropolis, or e their offices beyond a distance of ten miles from Charing Cross, who are not members of the council, will be members of the provincial committee and be engaged in promoting the welfare of the institution. Distant parts of the country are thus brought into close relations with the council and its secretary. The chairman of every provincial committee is able to collect all opinions of any value to the general body of practitioners. The principal men in every locality are brought to the notice of the council, and the whole system, by a species of automatic election, insures a succession of new competent men on the council-board and on the standing committees. Promotion is the key-note of the new organisation.

The provincial committee will form a nucleus, and become a centre of organisation in the locality, very much more effective than a provincial society which is trying to attach itself to the central body of the profession in London. The machinery which the Surveyors' Institution has already in work in its new scheme is simple, and is briefly as follows:—The county, portion of the county, or group of counties constitutes the unit of area in each case, and the council have powers to enlarge, sub-divide, or vary the area represented by a provincial committee as may appear desirable. All present and future Fellows of the Institution not being members of the council, or included among Metropolitan members, will be members of the committee of the district in which they practise. The powers and duties of the provincial committee will be derived from the council, who reserve the "right of revoking, limiting, or varying such powers"; each committee will be a separate unit "empowered to engage itself with such questions only as are directly relevant to its own district or to the distinctive interest of its own members, but will have no authority to enter into relations with any other provincial committee except through the channel of the council." The procedure of the committees is regulated by instructions annexed to the scheme: each is empowered to appoint a provisional chairman; the voting may be by ballot or by proxy, as the members may determine, the election being approved by the council; the committee to meet at least once a year, though oftener as they desire. They may make a collective representation to the council upon points of professional practice or matters of special local concern, through the chairman. Every application for membership of the Institution will be referred to the committee of the district before it is considered by the council, who will be guided *mainly* in dealing with it by the advice of the committee as communicated by the chairman. Applications from candidates for examination other than persons already connected with the Institution, or students at a place of professional instruction approved by the council, will also be referred to the committee of the district before they are considered by the council. For these purposes a provincial committee may appoint a sub-committee, which is to comprise not less than one-fourth of the whole committee, and not more than one member of any firm. The provisional chairman of each provincial committee is nominated by the council to conduct the election of the first chairman of each committee, or in the case of vacancy in the office arising by election to the council, by resignation, ill health, or death, the election of a successor, each chairman to be elected for one year, and will be the medium of communication with the council for his district. If, and when, elected a member of the council of the Institution, a provincial chairman is to vacate his office as such. Provincial chairmen will be members of and have seats in one or more of the standing committees of the Institution.

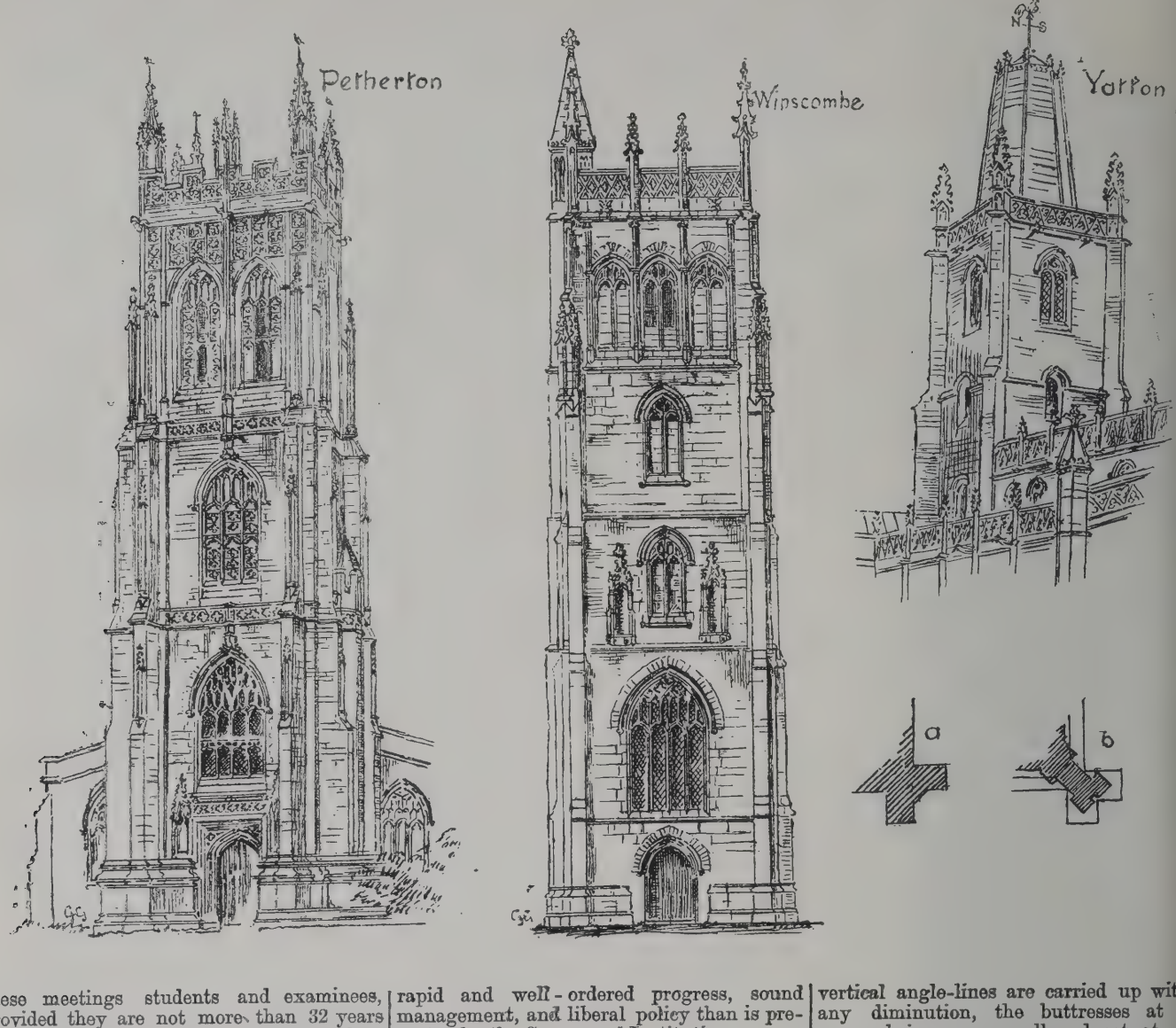
The special-certificate examinations for members in the three branches of forestry, sanitary science, and land surveying and levelling are destined to be highly valued by surveyors who have become specialists in these departments. With the object of giving a diploma or certificate that will be of great value to its holder, the council have instituted these special examinations. The origin of these special examinations is embodied in a clause of the Board of Agriculture Act by which the Government have power to aid any system of lectures or instruction connected with agriculture or forestry, and to inspect and report on any examination in them. The council of the Institution justly assert that forestry is peculiarly a land-agent's question, and that the Institution is identified with it, and therefore have taken measures to specialise the subject by granting a forestry certificate. The other subjects are the effect of light, the diseases of trees, the collection and testing of seeds of conifers and hardwoods, sowing, propagation by layering, slipping and grafting, site and aspect, soils, preparation of site, fencing, selection of trees for certain soils and aspects, nurseries, planting operations, and management, measurement, and valuation. In sanitary science, the examination comprises the arrangement and ventilation of buildings, water supply and drainage in town and country; also with relation to all kinds of public buildings, details of plumbers' work, surface and rain-water disposal, storage, composition of sewer-gas, and tests. The student will be required to show how an imperfect plan of drainage to a house can be put into an efficient state; how to drain farmsteads, building estates, and dispose of sewage and refuse; and to know the laws, liability of owner and occupier, of authorities, and adjoining owners.

Lists of textbooks are given under each subject, and the work actually carried out by the candidate in this subject will be taken into account. The rules and syllabus contain example-papers of the questions put in each subject.

Sanitary science and land surveying are equally special branches of the profession, and of particular value to those who are seeking public appointments under municipal, urban, and other authorities. But these special examinations are quite independent of those in the same subjects required for the ordinary qualifying examinations. That these special examinations are extremely difficult is shown by the fact that only three members have won certificates. The forestry examination is held in June of each year concurrently with special examinations in sanitary science and surveying. The indoor work will consist of written papers dealing with some or all of the subjects of the syllabus, besides a *vivâ voce* examination as to the identification of various timbers, seeds, foliage, and manifestations of disease. A *vivâ voce* examination will take place in the woods, in timber valuing and measuring, modes of felling, fencing, &c. This examination will include the physiology and anatomy of trees.

The examinations of the Institution are conducted in such a manner as to produce the most thorough test of practical knowledge. There is no board of examiners. To every subject more than one examiner is appointed, and to insure a selection of new and well-thought-out questions a very efficient and methodical system is put into operation, by which the independent opinions and questions of two or three examiners are obtained, and these are sifted by expert members till a reduced number of efficient questions—the *crême* of the whole submitted—have been collected for the purpose.

The establishment of "junior meetings," which has recently been introduced, already shows promise of admirable results. At



these meetings students and examinees, provided they are not more than 32 years of age, read and discuss papers, and to avoid interference with the ordinary general meetings they are limited to four during each session. The subjects are submitted to the council for approval. Two very important ends are insured by these junior meetings. The first is, that the council are able to discover the latent talent amongst the younger members, and assist in bringing them forward. Many diffident and retiring young men who shrink from reading papers or discussing questions before the elder members of the Institution have the opportunity of doing so before those of their own age and experience, and some of these papers are printed in the "Professional Notes." Another advantage of the junior meetings is that they supply an incentive to the younger and ambitious members to further the welfare of the Institution which gives them an opportunity of meeting. If the Architectural Association had been so affiliated to the Institute of Architects, or if the latter had seen fit to have provided an organisation for its younger members, we should not have seen so many attempts at disruption; isolated schemes and new societies could not have found a breathing place, and the independent do-the-best-for-yourself policy could not have endured. The Surveyors' Institution has set a wise example of anticipating the wants of the profession in every part of the country by a spirit of wise foresight, and by a conciliatory policy has rendered unnecessary rival societies. Hence the rapid development of the Institution, and the perfect harmony which exists between its members and the executive. On the whole, it may be doubted whether a better example could be found of rapid and well-ordered progress, sound management, and liberal policy than is presented by the Surveyors' Institution.

TYPICAL CHURCH TOWERS.—IV.

ANGLE-BUTTRESSING was carried to a high degree of perfection by the architects and masons engaged on the towers of Somersetshire. One of the many beauties which distinguish these structures from those of its class in other districts is due to the manner the belfry stage, and sometimes the whole tower, was, so to speak, "entasised" by the treatment of the angles. Diminution and graceful outline are, without doubt, two of the leading attributes of tower design. The diminution may take place by, first, a series of successive in-sets or set-offs of the faces of the tower by means of weatherings or stringcourses, which exhibit themselves at the outer angles in some cases, as at St. Mary Magdalene, Taunton, where the angles of the tower show themselves beyond the buttresses which project on each side. These set-offs are weathered at intervals, and are four in number, the upper or last one occurring just below the belfry story. Secondly, the outer angles may be carried up perpendicularly without any visible set-off; but the sides or faces of the belfry are set back. In this last form the outer angles are preserved vertical by means of angle-piers or pilasters which assert themselves above the first set-off. The towers of Wrington, St. Cuthbert's, Wells, and Evercreech show this last treatment. The set-off in the thickness of the walls occurs at the sill of the belfry windows (see sketches). At the fine tower of St. Stephen's, Bristol, the vertical angle-lines are carried up witho any diminution, the buttresses at ea corner being very small and set at so little distance from the outer angle on ea face. The same arrangement occurs on t smaller tower of Columpton Church, Devo shire, in which the outer angles of the tow are quite independent of the buttres which project on each face a few inch from the angle. We have a few instanc where the buttresses meet at a square an coincident with the angle of the tower-wa —that is to say, if we suppose the outer lin of the tower-walls are prolonged on pla they would form the true outer sides of t buttresses. A very remarkable instance making the buttresses on each front proj beyond this occurs in the fine tower Chewton Mendip. Here the axial lines each buttress on plan would meet at t same point as the external angle of tow walls; the re-entering angles are, howev filled up by small splays. These diversit amount in other words to this: that wher in many towers the angle of tower is m visible, as at Wrington and Evercreech, buttresses not joining at the angle; in ot examples, as at Chewton Mendip, the an of tower is lost by the buttresses, which j themselves at a right angle.

Another peculiarity is worth notice connection with the diminution of the bel stage. The buttresses at this story on e face are reduced to the size of pinnac which stand on the weatherings of the lo buttresses, and are connected by pierced w or buttresses to the angle of belfry as St. Mary's, Taunton, and at Huish Episc Both at Huish and at Banwell a solid angu buttress projects from the belfry corner, at the outer angles of this buttress

aged pinnacles, resting on the buttresses ow, which project at right angles to each er.

The fine tower of Winscombe Church, of ich we give an elevational view, shows arrangement of angle. The pinnacles are aged to the solid angular buttress behind, sufficiently distinct to show their outline and *b*). The pleasing treatment of the le window tracery, which fills up the ire side of the belfry between the splays uttresses, and the arrangement and pro- tions of the lower stories, are elegant. least satisfactory details are the parapet pinnacles, which, not being continuous h those below, look as if the parapet was addition. The corner pinnacles, which set square on the diagonal buttresses, ear somewhat awkward.

The tower of North Petherton is an example an undiminished structure quite unique its design. The angle of tower is carried in one vertical uninterrupted line; the ner buttresses, in fact, project from a y slightly pronounced pier through the ee lower stories: they are then weathered below the belfry, and from each a gonally-set pinnacle springs detached m the belfry wall, but connected by a short ing buttress at the top. The division of belfry by narrow pilasters, one at each gle and three intermediate, dividing the ace into unequal panels, and the surface richment of the upper portion of wall ove the belfry windows by diapering, are ticeable features of this beautiful tower. ese features add much grace and elegance the upper portion. We notice the skilful aking up of the wall surface by the narrow asters. At the corners the pilasters are aced so as to form a narrow panel and die derneath a cornice moulding. These rner panels carry up the lines of the lower ers in a very pleasing manner. The apering, consisting of three rows of quatre- ils divided by fine mullions, relieve the ll space above the belfry windows, and, in nnection with the panelling of the parapet, ves lightness to the upper part of the wer. A plain band of masonry between e parapet and the cornice enhances the fect of this diaper-work. The recurrence the quatrefoil panel in the bands between e stories adds to the richness of the tower, d gives it an exceptional interest. The adation of the buttresses and the engaged nnacles at each stage are points to which tention may be drawn. The diminution is ry gradual, the set-offs being small, add- g much to the grace of the outline.

Among the enriched examples of towers to e found in Somersetshire, we may name ose of St. Mary, Taunton, Huish, North etherton, as illustrating these varieties of rnament. The introduction of panelling and racery is very commonly met with, especi- lly in the upper stories, the belfries, and arapets; but the employment of quatrefoil iaper-work is less usual. On this ground, the xample of North Petherton is of particular nterest. We may here sum up the varied ethods which have been adopted in the reatment of the angle buttresses, especially t the belfry stage; but it will be of more alue to show them by plan.

THE SOCIETY OF ARCHITECTS.

THE second ordinary meeting of the past session was held on Tuesday evening at St. James's Hall, Piccadilly, Mr. Edward Tidman, F.S.I., member of council, in the chair. The following were elected as members:—John Cox Dear, 117, Great Russell-street, Blooms- bury, W.C.; Joseph Arthur Pywell, 8, Sylvan- Grove, Old Kent-road, S.E.; and Francis Ambrose Robert Willey, 66, Ludgate-hill, E.C.

THE SOCIETY'S EXCURSION INTO KENT.

An interesting address, descriptive of the excur- sion of the society last August through Kent, was delivered by Mr. G. A. T. Middleton, member. It was illustrated by numerous photographs taken by the lecturer and Mr. William Allport, member of council, and shown by the oxy-hydrogen lantern. The excursion was more largely attended than any previous one arranged by the society. Beginning at Rochester, the author mentioned that Mr. G. Payne, F.S.A., hon. secretary of the Kent Archæological Society, here met the members and conducted them over the cathedral, where work of all kinds was seen, from a rude coffin formed of simple slabs of stone, to the screen now in course of erection from the designs of Mr. J. L. Pearson, R.A. The fine mansion known as Restoration House, the Castle, and Eastgate House, a picturesque timber structure, immortalised as the Ladies' Seminary in the "Pickwick Papers," and as the Nun's House in "Edwin Drood," were also seen in Rochester. In the evening of the first day the members went on to Maidstone, and their next day (Tuesday) visits were paid to the Museum, the nucleus of which is a timber building dated 1540, to which additions have been, and are being, made from designs by Mr. Hubert Bensted; to All Saints' Church, a fine specimen of Early Perpendicular work, carefully restored by Mr. Pearson, and St. Augustine's College, a slighter later building. In the afternoon, Leeds Castle—of which the exterior is far more interesting than the modernised rooms within—and Detling Church, with its broach spire and carved lectern, were visited, *en route* to Tonbridge. From this centre, on the Wednesday, the church and a little known timber-built farmhouse, late 15th century in character, were seen on the way to Penshurst Place, one of the most beautiful, as it is also one of the largest country seats in England. The quaint village of Chiddingstone, Hever Castle, and the picturesque modern hamlet of Leigh, were the chief features of the afternoon's drive. On Thursday Knole House was the chief attraction, Lord Sackville having given special permission for the members to visit it. The reception did not appear to be of the character usually enjoyed by architects, for, according to Mr. Middleton, his lordship, although in residence, did not come forward to receive his guests, who, after paying 2s. each for admission, were kept waiting in the banqueting hall until the housekeeper arrived to show them over the building. The Elizabethan decoration had much of it unfortunately been spoiled by inartistic colouring; but such of the woodwork as had been left untinted, the plaster ceilings, and the stone and marble mantelpieces, are still as quaint and rich as anything of the kind that is to be found in England. At the time it may have been somewhat wearisome, passing through room after room, barely furnished, and with walls covered with pictures by artists, well-known and otherwise; but to look back was a different matter, and now none could be sorry for the time thus spent. The most interesting room perhaps was that which was specially furnished for James I., and which still contains the original heavy bed tapestry worked in silver and gold threads, and much embossed silver-ware. Leaving Knole House, the members next walked over Oldbury Camp, the largest British encampment which remains in existence, and thence to Ightham, where the Town House, a unique 15th-century cottage, the parish church, and the Moat having been seen, the party proceeded to Ashford and so on to Canterbury. The Friday seems to have been the busiest day of the whole hard-working week, and was devoted to the city. The pilgrims' hostlery, known as Eastbridge Hospital, the cathedral, St. Augustine's College, St. Pancras' desecrated church, and St. Martin's Church were all visited, the day closing with a formal meeting of the society in the Guildhall. The Saturday was spent at Dover, the Roman Pharos, the Oratory in the Castle Keep—a rich specimen of Transitional work—and the Armoury within the Keep having been viewed, St. Mary's Church was described by the Vicar, Canon Puckle, while the very interesting outing concluded with an inspection of the remains of St. Martin's Priory, now adapted to the use of Dover College and the Town-hall, in which are incorporated remains of the Maison Dieu, an Hospitium for all nations. Thus, said Mr. Middleton in closing, ended the most successful excursion which has yet been undertaken by the members of this society. It is now evident that these excursions have become exceedingly popular. Architects from all parts have an opportunity of meeting together in a most friendly way and of discussing, informally and without restraint, many points of mutual interest, and they return home feeling that they have not only enjoyed a week of recreation and amusement, but have added to their store of knowledge, and have added to the number of their friends.

At the close a vote of thanks was proposed by Mr. William Woodman, seconded by Mr. J. Hamilton, of Brighton, and having been supported by Messrs. W. Allport and A. Wallace Rimington, was carried by acclamation.

THE SURVEYORS' INSTITUTION.

AT the ballot for admission to the various classes of membership in this institution, held on Saturday last, the following new members were elected:—

As Fellows.—Stephen Bailey, R. Buck Broster, George Buckley, Henry Philip Chalk, William Clarkson, George Radcliffe Cobham, Samuel Hood Cowper Coles, Brian B. Hird Cowgill, Henry Brook Dransfield, Edward Fillingham, George William Finn, Thomas Hills Forsyth, Edwin Fox, jun., Arthur Richard Gradwell, M.S.A., Thomas Thornton Green, William Benjamin Hebditch, Isaac Matthews Jones, John Kidwell, Edward Osmond, William Henry Parker, William Parkin, Albert Woodward Parry, Frederick Cecil Parsons, Frederick Atkinson Powell, Arthur Stirling Pridmore, Peter Purves, Henry Adair Rawlins, Ithel Treharne Rees, Richard George Scriven, William Scroggs, Harry Samuel Senior, Harry Russell Smith, Edward Tidman, M.S.A., Joseph Harling Turner, Edward James Turton, John Allen Waddington, Francis Elliot Walker, Albert Mellor Walsh, Herbert Fuller Waring, Herbert Walter Williams, Stephen Woodbridge, jun., Lionel Burnet Woodforde, William Booth Woodhead, and Robert Walter Wordsworth.

As Professional Associates (all having passed the qualifying examination).—Francis Reginal Armytage, Cecil Hugh Aylen, Frederick Herbert Bancroft, Thomas Arncliffe Barclay, Maurice Frederick Beadel, Arthur Body, Frederick Edward Boulting, Frederick Henry Brackett, George William Cobham, Frank Minshull Elgood, Francis Ellis, William Forrest, Arthur Norman Garrard, Alexander Goddard, Alexander Ernest Green, James Henry Hodgkinson, Gilbert Plantagenet Mitchell Innes, Walter Robert Kay, Graham Harley Mould, George Osenton, jun., Edward John Partridge, Joseph Perkins, Richmond Pinder, Herbert Edward Prall, Frank J. Ruddle, Edwin Savill, Charles Frederick Slater, James Frederick Kemp Smith, Walter Wadman Snailum, William Wilton Rix Spelman, Ernest George Verity, Hugh Calthrop Webster, and Charles Bruce Wood.

As Associates.—Reginal Ward and John Wrightson.

NOTES ON BUILDING PRICES.—XIII.

By John Leaning.

ROADS—(*continued.*)

AVELING AND PORTER are the principal manufacturers of steam-rollers. A 15-ton roller burns 5cwt. of coke per day (in London, 11d. per cwt.); requires stoker, at 7d. per hour (in London); labourer with flag, at 5¾d. per hour (in London); two labourers spreading sand, 5¾d. per hour (in London); two men watering and sweeping, 5¾d. per hour (in London).

Mr. Boulnois says:—"The quantity rolled varies from 500 to 3,000 yards per day, the average for 42 towns being 1,105 square yards. The cost per square yard rolled, including all charges, may be assumed to be between ½d. and 1d. per yard, and the cost of binding material about 3d. per square yard."

Sir John Burgoyne, in his paper on "Rolling New-made Roads," after advocating the breaking of the stones to pass a 1½in. or 1¼in. ring, says:—"For the purpose of filling up the interstices of the broken stone and not to cover it, about three cubic yards in the whole per 100 square yards (equal to about 1in. in thickness if spread over the whole surface) will be required."

Burrows, in his paper on "Construction and Maintenance of Country Roads," says:—"Much good may be done with horse-rollers up to three or four tons' weight; but steam-rolling is preferable, if too great a weight be not applied at first. Some of the best work has been done by Aveling's roller, covering a width of about 7ft., and weighing not much over seven tons, this, worked at a cost of 22s. to 25s. per day, thoroughly compressing 2,000 yards new road surface."

The Paris trials gave the results: 1d. per square yard cost of horse rolling, ¾d. per square yard cost of steam rolling.

Tar Paving.—This is much used for footways in suburbs of the Metropolis and other towns; the price varies from 1s. 9d. to 2s. 6d. The present price paid by the School Board for London for 2½in. paving of the the best quality, made with broken limestone, is 1s. 10d. per yard.

It is almost always done by persons who, like the asphalters and wood-paving contractors, do

nothing else, so possess facilities for the doing of such work, with which the average builder cannot profitably compete.

Mr. Boulnois prescribes for footpaths 2½ pitch to 1½ tar, or 3¼ pitch to ¾ creosote oil.

Stone broken to the necessary size, about 1½in. cubes or gravel stones of equal size, the interstices filled with the bitumen and then covered with sharp sand or shell sand does very well. Sometimes the gravel or other stone is mixed with the bitumen on a board, as concrete is mixed, but generally it is boiled.

Broken Kentish rag is convenient for London work, and makes a paving superior to that made with gravel stones; the difference in value of the two is about 3d. per yard.

Some of the tar-paving contractors will maintain for five years at a small increase of price—about 2d. per yard.

The mixtures used for tar paving are various, see Boulnois and Hurst's "Architectural Surveyor's Handbook."

Asphalte Paving.—This is almost always done by the specialist, except damp-proof course (see Bricklayer). The builder never attempts it, and, if he did, could not do it so cheaply. As a consequence, the trade is confined to a small number of men who possess the necessary apparatus and employ workmen accustomed to the work.

Mr. Haywood's report to the Streets Committee of the City of London Commission of Sewers gives some valuable information as to the various manufactures, some of which have now entirely disappeared from the market. From this report we select the following particulars:—

LIST OF MATERIALS IN LONDON.

	Per yd. exclusive of freight.	Barge freight per ton.	Barge freight at 1·2 ton per
ROAD METAL.—	s. d.	s. d.	s. d.
2in. broken Kentish rag alongside wharves, below Westminster (cubic feet, 13·5 per ton)	4 8	2 0	2 2½
1½in. Do. Do.	6 6	2 0	2 2½
2in. broken Porthgain granite, alongside wharves below Westminster, including freight	11 9		
2in. broken Guernsey granite, and ditto as last	13 9		
A recent tender for this alongside at Chelsea	13 9	lowest offer.	
Mountsorrel granite delivered in trucks at St. Pancras or Camden railway stations:—			
2½in. broken for macadam	11 10		
2in. Do.	12 1		
1¾in. Do.	12 4		
1½in. Do.	12 10		

		Railway rates per yd.		
		King's Cross.	Mint-street and Farringdon-street.	Popl Black
FLINTS.—	s. d.	s. d.	s. d.	s.
Luton field flints, exclusive of freight	5 6			
Do. broken to a 2in. guage	6 3	3 11	— 4 6	— 5
Faversham field flints	5 6	delivered alongside to wharves		
Do. broken to a 2in. guage	6 3	Chelsea.		
Plymouth granite alongside wharves below Chelsea:—				
2in. broken for macadam, per yd.	19 0			
1½ Do. Do.	21 0			

stone, its weight, allowing 12c.ft. of solid granite to one ton, is approximately $1 \times \frac{13 \cdot 5}{12} = 1\frac{1}{8}$ ton."

Boulnois says: "55 per cent. of ordinary road metal is solid." Returning to Law and Clark. "Again one cubic yard is equivalent to 36 square yards 1in. deep, and one ton of metal laid without compression to a depth of 1in. covers an area of $(36 \times \frac{1}{1\frac{1}{8}} =)$ 32 square yards. When the metal is laid and rolled, the primitive volume is reduced by one-fourth, and one ton of rolled metal laid to a depth of 1in. covers an area one-fouth less than 32 or $(32 \times \frac{3}{4} =)$ 24 square yards." Boulnois says "a cubic yard of ordinary broken road metal will cover 30 square yards of surface."

To find the area of surface that can be covered by one ton of broken granite when the thickness of the layer is given, divide 32 by the thickness of the layer in inches unrolled, or divide 24 by the thickness of the layer in inches when rolled. The quotient is the area in square yards. To find the area of surface that can be covered by one cubic yard of broken granite when the thickness of the layer is given, when the metal is not rolled, divide 36 by the thickness in inches; the quotient is the number of square yards that can be covered. When the metal is rolled, divide 27 by the final thickness in inches to give the required quotient.

To each of the foregoing items must be added wharf charge (see article 9) and the cost of delivering into carts. When brought by barge, it would be either carted or sent by rail to its destination from one of the riverside railway wharves. The railway companies charge 6d. per ton for the transfer, from barge to truck about 6½d. per yard.

If thrown direct from the barge into a cart (as Article 9), a man should throw about 15yds. in a day of ten hours; constant ·66 at 5¾d. per hour = 3¾d. per yard. Observe that half the cargo will require a second throw, and that if the driver helps, and does an equal quantity of throwing, the cost will be reduced by one-half, as his time is charged in that for carting.

For throwing from a truck into a cart ma taken at the same price. A cart will take 1½ tons.

Notes of Cost of Road Materials and Labo the Country.—Mr. Burrows says (1884) i district, Kent, exclusive of cartage, gravel 2s. 5d. per cubic yard, flints 1s. 6½d., bea shingle into railway trucks 2s.

"The actual average cost per yard of sto the highway districts around me is:

Delivered on roads	4s. 2d. per
Breaking	1 1 ,
Spreading, raking, &c. (say, in forming new road)	0 2 ,
	5 5

"Breaking of rock and flints averages 1s per yard to pass a 2½in. ring. Spreading depend upon the system adopted in laying o stacking." With large heaps in depots, more than 100yds. apart, a man will dispo from 6 to 7 cubic yards per day. The ave cost of spreading in the highway districts all is to is 7d. per yard (about).

For cartage of materials, an average pric 7½d. per yard per mile.

Breaking up to a depth of 4in. may gene be done for 1d. per superficial yard.

Digging and Quarrying in the Country.— Mr. Burrows says (1884):—"The average of digging rock in four different highway tricts (Kent) I find to be 1s. 4d. per yard stone)."

Mr. Bailey Denton says (1857):—"Red s stone can be quarried to suitable sizes for " ford' foundation at 1s. 3d. per cubic y millstone grit, quarry, break to two sizes foundation and covering and clamp, 1s. per cubic yard; oolite and lias rocks, do. 1s. per cubic yard; digging chalk, including ba 1½ yards, clamped at pit ready for carting, per yard; digging gravel (with a baring 2 yards of soil) clamped at pit ready carting, 5½d. per cubic yard; raising chalk shaft and buckets not exceeding 20ft. deep, per cubic yard."

Codrington says:—"Maintenance of m adamised roads. Quarrying stone for r metalling usually costs, at ordinary rates wages, 6d. to 1s. per cubic yard, according the difficulty of the work, and stacking the st for measurement 2d. per cubic yard. Igne rocks are sometimes difficult and costly to quar and can then be broken at a comparatively ch rate, owing to small size of fragments. Thus s hard basalts and traps cost no more than 1s. per cubic yard to break, after having been rai from the quarry at 1s. per cubic yard or more.

Hurst says:—"A quarryman will be able turn out from 5 to 8 tons of limestone or ot stratified rock per day, and from ½ to 1 ton granite."

Rankine says:—	Consta Per y
Quarrying rock of moderate hardness with wedges	
Quarrying rock of moderate hardness by blasting	
Loading barrows with stone	
Unloading do.	
Wheeling one cubic yard of stone 100ft. horizontal; if on an ascent, allow 6ft. distance for each foot rise	

Generally, in the stone districts, each par

COST, EXCLUSIVE OF FOUNDATION.

Lime concrete per yard super. Thickness.	Situation.	Description.	First cost per sq. yd.	Years of maintenance included in first charge.
			s. d.	
9in. .. 1 9	Cheapside	2¼in. Val de Travers compressd.	16 3	2
9in. .. 1 9	Poultry	2¼in. ditto	16 3	2
6in. .. 1 9	Old Broad-street	2in. ditto	14 3	2
6in. .. 1 9	Moorgate-street	2in. ditto	14 3	2
3 0	Ditto	Barnett's liquid iron asphalte	10 6	3
	Ditto	2in. Limmer liquid asphalte	13 4	2
9in. .. 2 8	Lombard-street	Ditto	13 4	2
6in. .. 1 9	George-yard	1½in. Val de Travers liquid	10 3	10

This may be compared with the following list of tenders for street paving for the Board of Works for the Westminster District, July, 1890. Per superficial yard:—

	Compressed asphalte, 1in. thick on 3in. concrete.	Compressed asphalte, ¾in. thick on 3in. concrete.	Mastic asphalte, 1in. thick on 3in. concrete.	Mastic asphalte, ¾in. thick on 3in. concrete.	Mastic asphalte, ¾in. thick, overlaid with compressed asphalte ¾in. thick on 3in. concrete.	Compressed asphalte, 1½in. thick on 6in. concrete.	Compressed asphalte, 2in. thick on 6in. concrete.	Years of maintenance included in first charge.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	
Val de Travers	7 0	5 9	6 6	6 0	7 0	10 6	12 6	2
Limmer asphalte	6 0	5 0	5 9	5 3	6 6	10 0	12 0	2
French asphalte	6 6	5 6	6 3	5 6	7 0	10 6	12 6	2

The charge for asphalte work in the country is generally about 5 per cent. more than in London. Increase in the quantity modifies the price in some such ratio, as follows:—

	1in.
250ft. to 500ft. per superficial foot	11½d.
500ft. to 2,000ft. ,, ,, ,,	11¼d.
2,000ft. to 3,000ft. ,, ,, ,,	11d.
3,000ft. to 5,000ft. ,, ,, ,,	10½d.
5,000ft. to 10,000ft. ,, ,, ,,	10¼d.
10,000ft. to 20,000ft. ,, ,, ,,	9¾d.
And upwards ,, ,, ,,	9¼d.

But in large works it is always best to obtain a price from one of the asphalte companies.

Weight of Road Metal.—In calculating the value of cartage, knowledge of the weight of road metal will be necessary. Multiply the weight of a cubic foot of any stone by 27 to bring it to a cubic yard. Multiply the product by 0·55. The result will be the weight of a cubic yard of the same stones when broken for metalling (Boulnois).

A cubic yard of Guernsey granite broken to pass through a 2½in. ring gives an average of	Ton.	cwt.	lb.
	1	1	3
Flint	1	1	3
Pit gravel	1	4	3
Limestone	1	3	0

The following ready rules for the calculation of weights and quantity of road metal are extracted from Law and Clark's "Construction of Roads and Streets":—

"Since a cubic yard of loose broken stone contains only one half of its volume, or 13½c.ft. of solid

a quarry. The contractor for the repair and intenance of the roads obtains the rubble stone n it without charge, but he quarries, breaks, veys, and spreads it. Residents in such ishes may usually obtain stone for mending vate roads or building from the same quarry, ing a Royalty of 4d. to 6d. per cubic yard, doing their own quarrying. A common rate vages for a quarryman is 18s. per week; but is more commonly employed at a price per ic yard for quarrying the stones, which he ks with an ingenious looseness for measure- nt. The baring—the removal of the earth ve the beds of stone—would be extra. The t of quarrying ranges from 1s. to 1s. 6d. per ic yard, according to the compactness of the ne. Mr. Bailey Denton's prices above men- ned, although cited so long ago, are still, in main, correct.

Burnt Clay.—Mr. Burrows (1884) says: "I have ned it out ready for bottoming at a cost of less n 2s. per cubic yard, including digging the y, clamping, burning, and the necessary fuel. e digging, wheeling, and burning cost 1s. 1d. cubic yard, and a chaldron of breeze costing burnt from 9 to 12 cubic yards, according to size of heap.

Granite Curbs.—Guernsey curb, alongside in ge to wharves below Chelsea.

10in. by 6in., 1s. 2d. per ft. run.
12in. by 6in., 1s. 5d. ,, ,,

Mountsorrel Curbs.—In trucks at St. Pancras Camden.

in. by 12in. Mountsorrel edge curb, 1s. 5½d. per. ft. run.
2in. by 6in. Mountsorrel flat curb, 1s. 7½d. per ft. run.

Aberdeen and Norway Granite are about equal value, alongside in barges to wharves below elsea.

6in. by 12in., 1s. 9d.

Add on any of the foregoing curbs, if circular on n, 2d. per ft. run.

Plymouth.—

6in. by 12in. edge curb, 1s. 3d. per f run; circular 6d per ft. extra.

Kentish Rag.—Alongside in barges to wharves low Chelsea.

6in. by 9in. curb, 10¾d. per ft. run.
4in. by 8in. ,, 8¾d. ,, ,,

At Bricklayers' Arms Station add ½d. per ft. foregoing; add, if of circular plan, per ft. n 1d.

Guernsey.—Granite setts alongside in barges wharves below Chelsea:

	s.	d.	
3in. by 7in.	28	0	per ton.
4in. by 7in.	25	0	,,
5in. by 7in.	23	0	,,

Mountsorrel.—In trucks at St. Pancras or mden:

	s.	d.	
3in. by 5in.	25	3	per ton.
3in. by 6in.	28	3	,,
3in. by 7in.	28	3	,,
4in. by 4in.	25	3	,,
4in. by 9in.	24	3	,,

Plymouth.—Alongside in barges to wharves low Chelsea:

	s.	d.	
3in. by 5in.	28	6	per ton.
3in. by 6in.	26	6	,,
3in. by 7in.	28	6	,,
4in. by 4in.	40	0	,,
4in. by 9in.	25	6	,,

To the price of setts and curb add 6d. per ton r landing, and the cartage according to distance, suming a cart load at 1½ ton.

Boulnois says:—A ton of granite setts will ver, varying with specific gravity of stone 'or weight of stone, see "Notes on Building nstruction," Part III. Rivington)—

5in. by 3in.	4½ sq. yds.
6in. by 3in.	3⅔ ,,
4in. by 4in.	5⅓ ,,
7in. by 3in.	3 ,,

Lynde says (Institution of Civil Engineers, 79):—The average cost of repaving in Man- ester with Carnarvon granite setts was for—

4in. setts	10s.	per superficial yard.
5in. ,,	11s.	,, ,, ,,
6in. ,,	12s.	,, ,, ,,
7in. ,,	13s. to 13s. 6d.	,, ,, ,,

The details of the 6in. paving were as follows, per superficial yard:—

	s.	d.
Welsh granite setts at 27s. 3d. per ton delivered	7	5¼
Grouting with asphalte and granite chippings	1	2
Forming bed and laying setts	1	0
Carting	0	5
	10	0¼
Superintendence and plant, 10 per cent.....	1	0
Total	11	0¼

Forming contour of road bed. A man should do about 70 superficial yards in a day of 10 hours, this at 5¾d. per hour = ¾d. per yard. Constant ·014.

Spreading road-metal, shot in heaps at convenient distances, a man should spread in 6in. layers 30 cubic yards per day of 10 hours. This at 5¾d. per hour = 1¾d. per cubic yard. Constant ·033.

Picking up macadamised roads to a depth of 4in., a man should do 40 superficial yards per day of 10 hours. This at 5¾d. per hour = 1½d. nearly. Constant ·025.

Laying granite setts, including gravelling the bed and grouting: Paviour, per hour 9d.; labourer, 5¾d.

	Paviour and Labourer, Yards per day of 10 hours	Per yd.	Cnstnt.
Setts 5in. deep and under	11	1s. 1½d.	·09
,, 5in. to 7in.	10	1s. 2¾d.	·10
,, 7in. to 9in.	9	1s. 4½d.	·11

	Feet cube.	Per ft. cube.	
Setting curb in mortar, including preparation of gravel bed	36	4d.	·027

The foregoing may be applied by the comparison of the inches of section, a 12in. by 6in. curb being 72 sectional inches compared with a cubic foot, 144 sectional inches, we have $^{72}/_{144}$ = ½ of 4d. = 2d,

Laying wood-block paving, including grouting with bitumen (prepared by other men), and top-dressing with sand:

	Paviour and Labourer, Yards per day of 10 hours.	Per yd.	Cnstnt.
9in. by 6in. by 3in blocks	13	11¼d.	·077

Tar, Pitch, and Creosote.—These would be used for tar paving, for grouting granite-pitcher paving, and for making bituminous concrete.

Coal-tar can be obtained in small quantities at any gas-works. It costs, for 21 gallons and under, 4d. per gallon; above that quantity 3d. per gallon. The contractor may conveniently carry it in old paraffin casks purchased of oilmen. If required in large quantities, it is better to purchase it of a tar distiller, who will supply casks at 3s. 6d. each, the full amount returned if the cask is sent back undamaged.

At tar distiller's, coal-tar pitch (in blocks) cost 40s. per ton; Stockholm tar, in barrels costs 22s. per barrel of 28 gallons; Stockholm tar, second quality, in runlets, 33s. per runlet, 40 gallons—Stockholm tar varies in price, according to the condition of the market, as much as 20 per cent.

At tar distiller's, creosote oil, in barrels, 2¾d. per gallon, in casks at 3s. 6d., returnable.

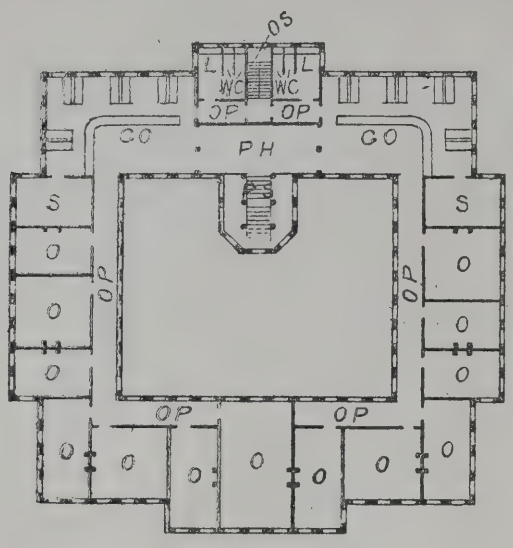
If a load is purchased, the manufacturer will generally deliver without extra charge. Smaller quantities must be fetched.

Jarrah Wood.—This wood is likely to be extensively used for paving, and for that purpose is imported of convenient size, 9in. by 3in., for sawing into blocks; 9in. by 5in. by 3in. (the orthodox dimensions), so as to be laid with the ends of the grain exposed. It may be bought in lengths of 3ft. to 20ft., at £6 15s. per load at docks; to this must be added cartage. The sawing costs 25s. per thousand blocks, usually done by saw-mills, who will fetch the timber from docks at as low a rate as the builder can do it. The waste will not exceed 5 per cent.

THE LABOUR QUESTION AS REGARDS AGRICULTURE.

At the meeting of the Surveyors' Institution, held at 12, Great George-street, on Monday evening last, the President, Mr. R. C. Driver, in the chair, an interesting and well-considered paper on the above subject was read by Mr. T. A. Dickson, F.S.I. It may, at first sight, appear that the theme of the paper is one which but little affects the interests of our readers; but when it is remembered that the state of the labour market in towns is, to a great extent, governed by the prevailing conditions of agricultural labour, it will be seen that the subject is one in which all employers have a very real concern. After setting forth the very large proportion of the farmer's profit which is swallowed up by the item of labour, and the, nevertheless, very frequently unprosperous condition of the labourer himself, Mr. Dickson proceeded to explain that this had been very largely due to the unsatisfactory working of the Poor Laws, especially in the matter of outdoor relief. He quoted figures which showed that, where more effective administration had been adopted, whether in rural or urban districts, the result had been invariably an improvement in the status of the labouring classes. By a series of elaborate historical statistics, based on the researches of Professor Thorold Rogers, it was shown that, although the condition of the labourer, so far as the purchasing power of the average wage was concerned, had steadily declined until about the year 1834, there had since been a marked improvement in this respect; and the author pointed out that ever since the 14th century legislation for the agricultural labourer had been on wrong lines, tending rather to pauperise and degrade him than to help and elevate. A natural result of this was clearly shown in the Registrar-General's report on the last census, in which it is stated that "in no less than fourteen counties—all agricultural—there has been a decrease in the population, many of the inhabitants having migrated to the manufacturing and mining districts." The profit-sharing system propounded by Mr. George Livesey for the stokers and others employed by the South London Gasworks, and the superannuation scheme of the Great Eastern Railway Co. for its employés, could not, the author of the paper thought, fail to draw men from the country to the town. After considering and comparing the different ways of paying wages in the country, whether partly in money and partly in board and lodging, or perquisites, or wholly in money, each system affecting differently the comfort and prosperity of the labourer, while making but little ultimate difference in the wages bill per acre, Mr. Dickson went on to consider how best the present state of matters could be improved, the migration from the country into the towns checked, and the existing scarcity of labour in the rural districts, and its undue preponderance in the urban markets, remedied. For these purposes he proposed first, the encouragement of thrift, by a reform in the administration of out-door relief and by the establishment of greater facilities for insurance and investment of savings, and the easier acquisition of allotments. A great want was felt in the country of a scheme of assurance and sick relief large and solid enough to remove all doubts of its permanence and stability, and to reduce working expenses to a minimum, yet sufficiently sub-divided and local to prevent imposition. An amplification of the present Post Office Assurance and Savings Bank system would probably meet this want, and by making the benefits derivable to accrue at an age when a man might reasonably wish to realise the savings of his youth, Mr. Dickson contended that not only would thrift be encouraged, but the evils of early and improvident marriages would also be reduced. The teaching to the more intelligent of the labourers of some one of the many handicrafts useful on the farm would also improve the scale of wages, and a co-operative scheme, somewhat on the lines of that adopted by the South Metropolitan Gas Company, or the Parisian firm of painters and decorators originated by Leclaire, could not, if as ably worked as these, fail to do some good. Better provision for recreation, for night schools, and for some system of agricultural technical education were also advocated, although the author was careful not to give his sanction to any scheme which proposed to tax the whole community for the exclusive benefit of agriculture. The last suggestion was for the improvement in cottages, in which anyone who compared the wretched hovels of some few years ago with the comfortable dwellings which in many parts of the country were superseding them must recognise a very important factor towards the attainment of the end sought. Mr. Dickson concluded with a hopeful allusion to the improvements in this direction which, he thought, could not but follow from the operation of the Housing of the Working Classes Act of last session.

Flockton & Gibbs' Improvements in Arranging the Plan of Buildings.


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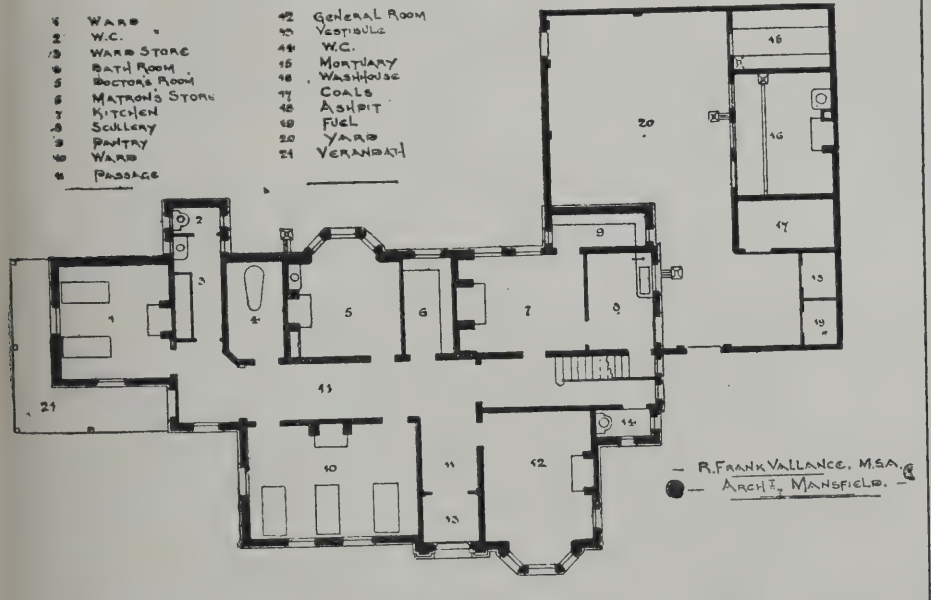


MANSFIELD AND MANSFIELD WOODHOUSE DISTRICT HOSPITAL.

MANSFIELD AND MANSFIELD WOODHOUSE DISTRICT HOSPITAL.

THE new Accident Hospital, of which we give a sketch, and which has just been completed, was formally opened on Monday, the 27th ult., by the Duke of Portland.

The building is centrally situated. The accommodation provided is two wards for three and two beds respectively, general or committee-room, doctor's room, bath-room, ward store, and general store. In the administrative department are kitchen, scullery, pantry, good cellar, three bedrooms, and store-room. The outbuildings comprise mortuary, wash-house, and the usual offices. Additional accommodation can easily be provided by the erection of another ward, as indicated in the architect's plans. The walls are of brick (built hollow), relieved with stone dressings used sparingly, and the roof slated. Internally the woodwork is in yellow pine, stained and varnished. The floors of wards, general room, doctor's room, and bedrooms are of red deal in narrow widths; the floors of corridor, bath-room, and w.c. are of cement concrete. The windows have deep bottom rails, which allow of the lower sash being opened and fresh air admitted at the meeting rails without draught. The upper part of the windows in the wards (above transome) opens inwards. The contractors for the building are Messrs. Evans and Woodcock, of Nottingham, and the architect, Mr. R. Frank Vallance, M.S.A., under whose superintendence the works have been carried out.



CONDITIONS OF SAFETY IN THE USE OF GEYSERS.

A LECTURE on this subject was given by Mr. George Ewart before the Balloon Society on Friday evening. In his opening remarks he confessed that manufacturers, including the firm whom he represented, did not at first understand the danger that geyser baths involved, and even now there was great difficulty in gaining the attention of those who already possessed geysers. Having explained the principle on which geysers are constructed—that of absorbing heat from gas by flowing water—Mr. Ewart pointed out that the danger arose from the small size of the bath-room, owing to the production of carbonic-acid gas. It was useless to warn people to keep the door or window open whenever a bath heated by gas was used, for sooner or later the precaution would be forgotten, or the bath used by someone ignorant of the necessity. It was, therefore, imperative that the products of combustion should be conveyed outside the bath-room by self-acting apparatus. This could be partially done by fixing a hood over the top of the geyser, in which the products might collect, and if the hood was of greater diameter than the geyser, and was connected with the outer air by a pipe not less than 6in. in diameter, the danger would be greatly diminished. There remained, however, a possibility of michief being done by stopping up the pipe to prevent down-draught. A much easier as well as safer plan was to gather the whole of the products into a copper cap, which formed a part of the geyser itself, and had a fixed socket of sufficient diameter. A "vent" pipe of the same or larger size connected with this socket conveyed the whole of the products outside the room. He pointed out that if every geyser were fitted with a vent-pipe, there would be no more fatal accidents. There was the risk of inconvenience from down-blow in the vent-pipe; but this would be obviated by shielding it. To the geysers made by his firm an enamelled label was so affixed over the spout that it could not be removed without disfigurement, stating that the geyser must not be fixed without a vent-pipe, and that the bath must not be entered while the geyser was alight. As the public were careless, and plumbers and gas-fitters frequently obstinate and conceited, as well as sometimes ignorant, he recommended that it should be made a penal offence for any maker to sell an instrument capable of consuming more than a certain quantity of gas per minute without the enamelled warning as to vent-pipe, and also for any fitter to fix any such apparatus in any room containing less than a certain number of cubic feet of air. The machine should also be so constructed as to admit of the vent-pipe being easily attached to a socket specially arranged for the purpose.

A cottage hospital at Kirkcaldy, built at a cost of £3,000, was formally opened on Saturday.

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CONTEMPORARY MUNICIPAL ENGINEERS AND SURVEYORS.—GRAND HOTEL, LITTLESTONE-ON-SEA.—AN INGLE NOOK.—HEAD-QUARTERS OF THE ST. GEORGE'S RIFLES, DAVIES-STREET, W.—BRANDESBURTON CHURCH.—SKETCHES IN SHROPSHIRE.—THE FOX INN, KESTON COMMON, KENT.—SOME TYPES OF CHAIRS.

Our Illustrations.

CONTEMPORARY MUNICIPAL ENGINEERS AND SURVEYORS.

(See description on page 771.)

GRAND HOTEL, LITTLESTONE-ON-SEA, KENT.

The design we illustrate to-day is by Mr. Percy Burnell Tubbs, of 77, Fore-street, City, E.C., who has been retained by the directors of the Littlestone-on-Sea Hotels Co. to act as their architect. The scheme, although at present comprehensive, is capable of extension, and when the building is complete it will compare most favourably with hotels at other sea-side resorts. It contains large coffee and smoking-rooms, billiard-room, reading and drawing-rooms, private dining-rooms, and golf club-room. A restaurant is also arranged, so that while distinct from the hotel it is capable of direct supervision. Ample bed accommodation is provided in 60 large and lofty rooms, with baths and lavatories on each floor, and the hotel is fitted throughout with electric bells and every other modern appliance, including a passenger lift. The construction is of brick, faced with Portland cement, the roofs being covered with Welsh slates in ornamental bands. The style chosen has proved suitable for the position of the building on the marine front. The bay windows afford extensive views of the English Channel. The tower, which forms a good central feature, is easily accessible from the main staircase, and from it a fine view of the surrounding country and coast-line to Hythe and Folkestone may be obtained. The estate on which the hotel stands adjoins the ancient Cinque port of Romney, and the neighbourhood is full of antiquarian and historic interest. It is rapidly developing, and one of its attractions are the extensive golf links, which extend for upwards of three miles in length.

A CORNER OF A BOUDOIR.

Our illustration is from a coloured drawing which appeared in the Royal Academy Exhibition of this year. The chimneypiece, arch, and panelling of the room were finished an ivory white, door and furniture of dark mahogany. The frieze was an embossed paper, cream with gold background; draperies, pale steel blue, and carpet background a darker shade of same colour. The design and drawing are by Mr. J. Armstrong Stenhouse.

BRANDESBURTON CHURCH, YORKSHIRE.

Before the work of reparation was commenced last year the church was most forlorn. Deal "loose box" pews, flat plaster ceilings, windows walled up, whitewash everywhere, western gallery, and the superior parishioners accommodated in the chancel. During the alterations some very interesting discoveries have been made, and are now in evidence. One of the most successful works has been the straightening of the north and south nave arcades, which were alarmingly out of the perpendicular, and this was done without removing the present nave roof. There are some good brasses now exposed to view, one belonging to the St. Quintin family, the founders of the chantry chapel, which stood on the north side of chancel. The contractors were Messrs. H. and W. K. Barr, of Hornsea, who have carried out the whole of the works, except the marble pavement and the nave seats, the former supplied by Messrs. Farmer and Brindley, of London, and the latter made by Mr. J. Robinson, of Brandesburton. The stone is from the Whitby Crag Moor Stone Quarries. The tower and nave roof remain to be dealt with when funds permit. The work has been carried out under the superintendence of Mr. W. S. Weatherley, architect, of 20, Cockspur-street, London, no clerk of the works having been employed.

NEW HEAD-QUARTERS FOR THE ST. GEORGE'S RIFLES (SIXTH MIDDLESEX).

The new head-quarters of the St. George's Rifles (hon. colonel: Col. C. Washington Eves, C.M.G.; Col. Stanley George Bird, commanding) occupy an important site in Davies-street, Grosvenor-square, W. The land has been granted to the regiment by His Grace the Duke of Westminster on a long lease at a peppercorn rental, and occupies part of the site of old Shepherd's Market. The building has been erected to provide the regiment with a suitable drill hall, armoury, gymnasium, Morris tube gallery, recreation room, colonel's and officers' rooms, &c.; also the requisite accommodation for the regimental staff. The drill hall is about 90ft. in length and 57ft. in width, and has an open roof, with lantern light in centre. The front elevation is faced with red pressed bricks, and the dressings and masonry are of Portland stone. The porch has polished red Peterhead granite columns. The roof to the front portion is covered with Broseley tiles, and the turret and cupola with copper, by Messrs. Ewart and Son. The general carving was executed by Mr. A. Bradford, but the figures in the pediment of the porch—viz., St. George and the Dragon—will be sculptured by Lieut. G. E. Wade, one of the officers of the regiment, and will be presented by him. The floors are of fireproof construction throughout. The drill hall and principal rooms have pitch-pine flooring on fir joists, and sleepers above the concrete. The corridors and entrance hall are paved with marble mosaic and terrazzo. The works have been carried out under the superintendence of the architect, Mr. Charles Herbert Shoppee, F.R.I.B.A., of 22, John-street, and 61, Doughty-street, London; the general contractors for the works being Messrs. E. Lawrance and Sons, of 14 and 16, Wharf-road, City-road, N. Her Grace the Duchess of Westminster will open the head-quarters on Saturday in next week, December 6th.

SKETCHES IN SHROPSHIRE.

This sheet of pencil studies represent some of the most characteristic specimens of old timber building combined with stonework to be found in Shropshire. Much Wenlock Priory, the more famous of these, is drawn from the quadrangle, and the entrance front is given of Ludford Hall,* near Ludlow. The Blue Bridge Inn at Much Wenlock figures below, by the side of some more old timber houses at Ludford. Mr. George P. Bankart, of Leicester, is the author of these exceedingly interesting drawings.

THE FOX INN, KESTON.

The Fox Inn is very picturesquely situated at one corner of Keston Common, in the county of Kent, with charming views and walks in the immediate vicinity, while close by is the famous Cæsar's Well. The old house, which had been in existence for the last two hundred years, was pulled down and entirely rebuilt in 1889 on a much larger scale, so as to accommodate the ever-increasing number of pleasure-seekers who betake themselves here during the summer and autumn months. The hotel accommodation is ample, and there is a spacious club-room for cyclists, &c., on the first floor, and the stabling is utilised to its full capacity on a fine summer's day. The Fox was rebuilt for Messrs. H. and V. Nicholl (Limited), by Mr. Thos. Knight, builder, of Sidcup, Kent, for the sum of £2,000, from the designs and under the superintendence of Mr. Albert L. Guy, A.R.I.B.A., 78, High-street, Lewisham, S.E.

* See Building News April 15, 1881, for another view and particulars.

FOUR CHAIRS FROM FLORENCE.

These examples of a branch of furniture which is always useful, are not only good in themselves, but are also valuable as being suggestive of ideas which may be of service in modern chair design. The subjects of our sheet of sketches are all of Italian origin, and are located in the National Museum at Florence. They belong principally to the 15th and 16th centuries. The first and fourth seats in the illustration resemble earlier Roman examples, and are usually known as such. The last chair shown is a form which was in general use in Venice in the 16th century. In this the seat is fastened into two planks—the one in front being shorter, and the one behind being long enough to form a back rest. The parts are often stout, and admit of massive carving, grotesques seldom being absent. The chair at the right-hand top is of a more ordinary form, with leather seat and back, but made folding, which latter feature is rather unusual. The two shell-like ornaments at top, too, are curious.

CHIPS.

A fresh appeal for funds to complete the restoration of Croyland Abbey has just been issued by the rector of that parish. It is stated that the work of reparation was begun on the 28th of September, 1888, and six out of the ten sections (into which he originally divided the work) have been accomplished at the small cost of £1,400. He now desires to secure the steeple and north wall of the north aisle. A sum of £2,000 is still required.

An oak cope chest, with semicircular cover, designed and executed on the premises of Messrs. Criddle and Smith, Truro, has been placed in the crypt of Truro Cathedral.

A monument has been erected in the churchyard of St. Michael's, Tenbury, over the grave of the late Rev. Sir Frederick Gore-Ouseley. It is a recumbent tomb, executed in polished red granite, with a cross in white marble resting upon it.

At a meeting of the Dartford Local Board on Friday it was proposed that the salary of the board's surveyor, Mr. Harston, be increased from £200 to £250 per annum. The motion was carried, an amendment that the increase be £25 a year obtaining only one vote.

The Native Guano Company have converted a portion of the riverside ground adjoining the sewage precipitation works at Kingston-on-Thames into a promenade and pleasure resort. The first completed section of the new recreation-ground, which will be known as Canbury Gardens, was formally opened last week.

The parish church of St. Mary, Stamford, has been reopened after restoration from plans by Mr. Sedding. The nave floor has been lowered and the seating improved, while in chancel new altar, choir-stall, rood screen of oak, and a sanctuary floor of white and black marble in squares have been constructed. The contractors for the work in the nave were Messrs. Roberts, of Stamford, and for that in the chancel Messrs. Trask, of Norton, Somerset. The outlay has been over £2,500.

The funeral of Mr. Stephen Ballard, M.I.C.E., of The Winnings, Colwall, near Malvern, took place on the 20th inst. Mr. Ballard was engaged with Mr. Brassey in the construction of many lines of railway at home and abroad. He left instructions in his will that he should be buried on a spot of ground belonging to the Great Western Railway Company, on the hillside, and contiguous to the ventilation shaft of the tunnel which passes through the Malvern Hills. The spot is a secluded and picturesque one, and is surrounded by trees. Mr. Ballard was the contractor for this tunnel.

At St. Michael's Church, Broadway, Worcestershire, services to commemorate the jubilee of the church, which was consecrated Nov. 3rd, 1840, and to celebrate its reopening after the provision of new seats and other improvements, were held last week. By the expenditure of £350 the church has been re-seated. Eighty new sittings are provided. The seats are of pitch pine, and they take the place of narrow, uncomfortable pews with upright backs. There are now four rows of seats in the place of three. Under the seats a flooring of 1½in. deal boards, with oak curb fixed on oak joist, has been laid down. The stone flooring is replaced by encaustic tiles both in the church and porch. The general work of reseating has been carried out by Messrs. Espley and Co., of Evesham.

WAYSIDE NOTES.

RESTORERS generally open their mouths so wide when they ask for funds, that one feels the greater pleasure in giving prominence to the modest appeal of the rector of Croyland for the comparatively small amount still required to put the old Fenland abbey church in decent repair. The rector, in a letter to the *Times*, says that from the commencement of operations on September 28th, 1888, up to the present time, the sum of £1,400 has been expended, and that the repair of the north wall and spire—the rev. gentleman uses the good old English word *steeple*—necessitates a further outlay of £2,000. A grand total of three thousand four hundred pounds sterling is not a vast sum to spend on an old building as things go nowadays. Moreover, since what remains of the abbey of Croyland is architecturally beautiful, historically interesting, and invested by Kingsley in his "Hereward the Wake" with something of romance, it has claims on the charity of English men and women which ought not to be ignored. It is much to be hoped that many able and willing persons will generally loosen their purse-strings, and contribute towards the requisite £2,000, which, indeed, is a modest sum enough. Further, I believe that in this case the *restoration* is rather such a work of *reparation* as I have long argued is what nine out of ten old buildings require.

In further elucidation of the manner in which ancient Egyptian monuments are destroyed, I note a letter from "Traveller"—a *Times* correspondent—stating the fact that he has been an eye-witness for one whole month to an operation concerning which we from time to time have rumours. I allude to the removal of blocks of stone from the base of the Pyramids. Quite a trade seems to be carried on in this way—the Arabs breaking up the large stones, so laboriously wrought into shape some 4,000 years ago, and disposing of the fragments as building material. I have no doubt, considering the great mass and bulk of the Pyramids, the lethargic nature of modern building, and the absence of our friend, Mr. B., from the land of Egypt, that this process might be carried on for some time with little visible effect; but this makes the operation not one whit less criminal. The Arabs, who make a veritable stone-quarry of the Pyramids, have had, however, many precedents set them in this country. What so common as to find stones from old ecclesiastical edifices built into cottage-walls, not as re-worked blocks, but with cusp, moulding, or carving in all its pristine glory unblushingly displayed? And there are not a few buildings in England wholly constructed of material purloined from neighbouring abbey, church, or castle.

On Saturday last there happened an accident in New York of a kind of which we have had many examples in this country since the days when the homogeneous construction of the past gave place to the system of building with iron skeletons, as now in vogue. A new brick building was being constructed for the firm of Wells, Fargo, and Co., and, without any available warning, one of the walls fell into a heap, burying some fifty workmen under the ruins. The report of the occurrence said that it was "understood that the iron girders that were being put into the building were too heavy for the brickwork," and that it was "believed that their weight, under the high wind which prevailed, was the cause of the accident." As throwing some further light on the cause of the disaster, I read that the wall fell in a "vacant lot." From the latter fact, one might conclude that it was a long wall with little or no "tie." Such, at any rate, has been the case in a great number of instances where a collapse of this nature has occurred, and it is only by a good fortune that many more walls of this kind do not fall in, if we may judge from the frequency with which builders will put up structures offensive to every eye imbued with a sense of constructive fitness.

Half a gale turned on at the right moment would bring down walls of this description like wind-falls from an apple-tree. In an exposed seaside situation I have seen walls thus turned over like nine-pins, in which place I remember it was the custom of Buggins and Co. to *prop the green walls*, when without sufficient tie, *with scaffold poles*. The other cause to which the New York accident is partly attributed—viz., the weight of girders on a weak wall, is also familiar enough, unfortunately, in this country. Designers may be seen sometimes to concentrate a load on the end of an iron girder, and place it anywhere and anyhow on the walls—both in plan and in practice—with as much suaveness of manner as though placing a hat-peg on its rail. Stanchions are treated with superior contempt, and the idea of thickening the wall a little where the girder bears, never, apparently, occurs—at least to some planners.

I believe there are many architects who have a mortal hatred of stanchions. I have myself, and regard them as leading to constructive shams, though they are at least honest, hard-working members of a building, while the granite, stone, or terracotta pilasters before them are rank impostors. At the same time, if great loads are to be concentrated on one spot, the iron skeleton must be made complete in all its parts. Fully carried out with stanchions, girders, and columns, properly designed so as to admit of a perfect system of bolting and riveting, the iron framework method of construction, fatal, though it may be, in our present state of knowledge*, to true architectural progress, yet affords an unrivalled means to bracing a building. When employed in a half-hearted manner, however, the tie is incomplete. In stating, therefore, as I have above, that accidents have happened, in these days of mixed construction, unknown in the era of timber, brick, and stone simply employed, it would be an injustice to lay the blame directly on the new system itself. Accidents are solely to be referred to its abuse, and to its use by persons ignorant of the principles of iron construction. What may happen where iron is unskilfully employed was well shown some years back at Sidcup, when a passing traction-engine literally shook down a couple of shops, nearly completed. The marvel of this extraordinary incident may perhaps be somewhat lessened when I state that, from personal inspection of the débris some hours subsequent to the collapse, I can vouch for the fact that there were not two bricks adhering the one to the other, such was the nature of the "mortar" employed.

"Débris," or "hard, dry rubbish," in a specification? Personally, I have had nothing to do with the former word in any specifications of my own or those of other parties with which in former years I may have been concerned. From the reports of the case of "School Board for London v. Wall Brothers," I gather that some years back, if not at the present time, the architect to the department employed the word "*débris*." I put the two terms forward impartially, but must confess, judging by the result associated with the use of the shorter and more compact, if alien, expression, that the good old words "hard, dry rubbish" are to be preferred.

One of the best things I have heard for some time is that Mr. Waterhouse will be the president of the Art Congress for 1891. Under the presidency of so able an architect, the Congress of 1891 should be a vast improvement on that recently held at Birmingham, which has generally been voted dull. For an assembly like the N.A.A. no one should be a better president than an architect, who is, of necessity, interested and, so to speak, in touch with all the arts. This cannot be said of everyone serving the ends of art. It is too much the tendency to run in grooves, and become absorbed in the contemplation of one side of a question only. An architect, I think I may venture to say, takes generally a broader aspect of affairs than artists pure and simple, as a confirmation of which there is the fact that the education of an architect is the best possible beginning for artists in almost every branch of art work. I have, moreover, often moralised with myself to the effect that an architect gets better hold of broad principles of design than others. That an architect, then, should preside over a meeting of art-workers in every walk of life, and over a public interested in the productions of such persons, seems only natural and proper.

A discourse descriptive of holiday touring possesses a special charm to the architect, reminding him as it does of quite the pleasantest side of his architectural life. Meetings whereat papers of this nature are read are generally well attended. I understand that Mr. Robinson's entertaining description of the Association's tour was much enjoyed by the members who appreciated Irish humour, and were quite prepared to believe that "This abbey is now a farmyard," &c. It was a great disappointment to me not to be able to attend the meeting of the Society of Architects on Tuesday, when Mr. Middleton gave what must have proved a most enjoyable address on the Society's tour in Kent. From all I have heard from members of the Society who joined the excursion, this was one of the most successful undertaken by any body of architects on old-building hunting intent. A recounting of things done and seen by Mr. Middleton must have given great pleasure to all his hearers, and particularly to those who have the memory of the excursion fresh in their minds. Features of the evening, a friend tells me, were the large attendance of ladies—the most numerous he remembers seeing at a meeting of the Society—and the heavy onslaught on to the tea and coffee in the Society's council chamber afterwards.

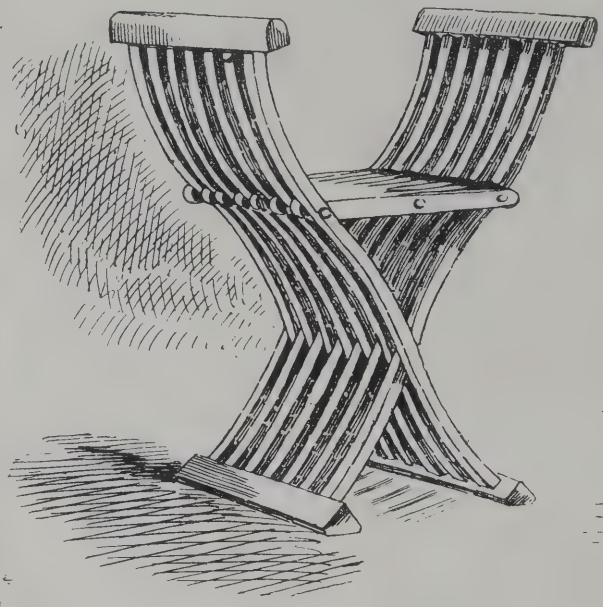
Concerning the Huyton-with-Roby competition, "One who Thought of Competing" writes from Birkenhead, and kindly incloses cutting from the Liverpool *Courier*, which he thinks may interest me. It certainly does; but I rather fancy it would vastly more interest intending competitors. *They* might feel a little indignant to learn that, whilst preparing sketches and racking their brains to supply the building for £5,000, *including their own commission*, many of the ratepayers of Huyton are up in arms against the Local Board, and intend to do their best to prevent the job coming off; one speaker at a public meeting stating his conviction that "the £100 already offered (in premiums) was simply thrown away." Our correspondent says that the particulars issued to competitors are of a very meagre description. "A large site is shown, out of which, apparently, you may take any piece that suits you without question of economy of space." This should be noted as somewhat unique in its way. No professional referee is mentioned, nor is it stated whether the plans are to be sent in under motto or not. It would further appear, from the cutting from the *Courier*, that even the members of the Local Board are divided among themselves as to the site. Anyone going in for the competition after these statements will be of a decidedly hopeful disposition. I award the palm in this respect, however, to our correspondent, who concludes his letter with "This seems a case for the intervention of the Institute Competition Committee." I fear the matter will stay at "seeming." Anyhow, my best thanks to "One who Thought of Competing," and may his next adventure be more successful. His comment on this curious Huyton-with-Roby affair, taken in conjunction with the newspaper report of the ratepayers' meeting, are a confirmation of what I hinted last week, and go to the support of what I said, in a general way, as to these commission-including competitions. GOTH.

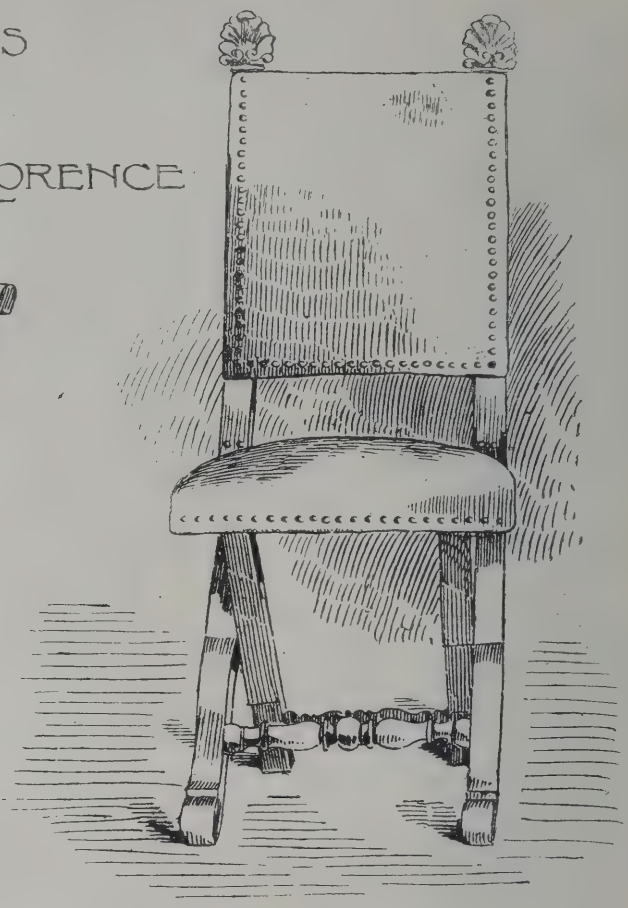
On Saturday last, the old chime of musical bells of St. Giles' Cathedral, Edinburgh, which have been replaced by tubular bells, were sold by public auction in Edinburgh. The chime consisted of nineteen bells, cast nearly two hundred years ago by Meikle, Castlehill. They were sold singly, and, judging from the briskness of the bidding, there was a desire on the part of many to possess a memento of Old Edinburgh. They fetched from £2 15s. for the smallest, a bell 8in. high by 6in. in diameter, to £36 for the largest, measuring 23in. by 19in., the total amount realised being £202 10s.

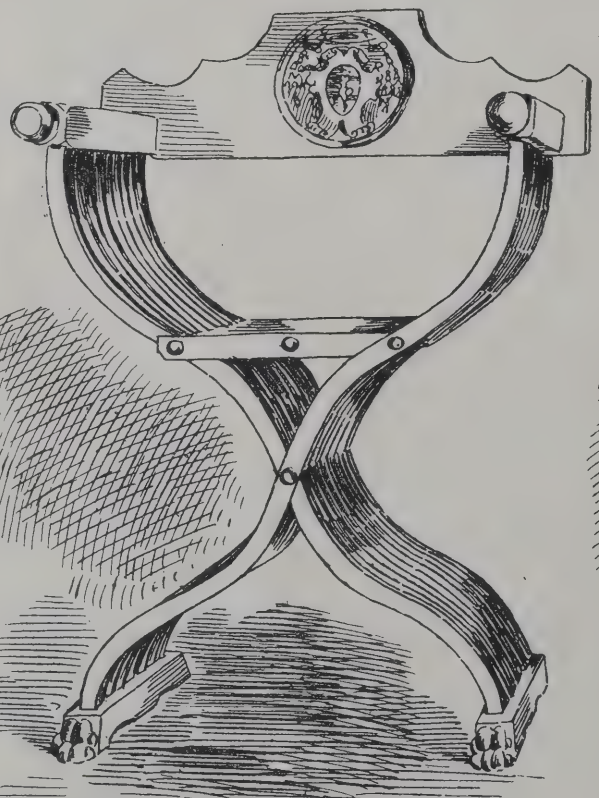
A stained-glass window has been erected on the staircase leading from the town hall to the council-chamber at Wednesbury. The base is occupied by a large panel covered with oak and mistletoe, and two large shields with ribbons. One shield contains the seal of the late Local Board of Health, and its garter bears the date "A.D. 1851," when the Board was formally constituted. The other shield bears the borough arms, with the date "A.D. 1886," when the new municipality was formed. The chief portion of the window is occupied by two full-length figures. One represents the god Woden, from whom the town was named, and the other Ethelfreda, daughter of Alfred the Great. The Princess's left hand supports the model of a castle, in allusion to the many strongholds she erected, including Wednesbury Castle. The work was designed by Messrs. Wood and Kendrick, the architects under whose direction the improvements at the hall have been carried out.

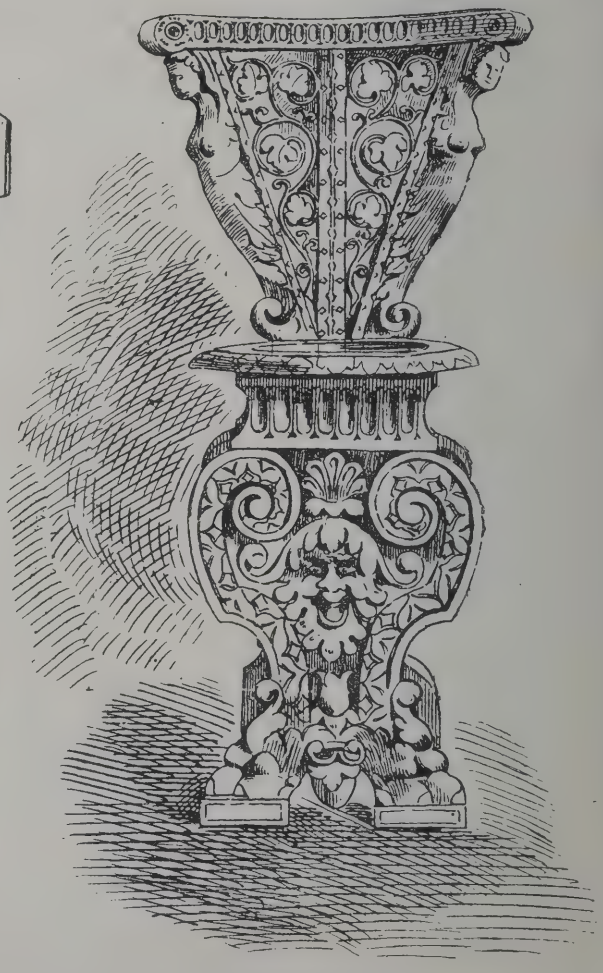
* Terracotta seems to be improving the outlook in this direction.

TYPES OF CHAIRS FROM THE NATIONAL MUSEUM FLORENCE









E. Chancellor del.

DELLAGANA &c.


THE · FOX · INN ·
KESTON · COMMON · KENT · (REBUILT 1889)
A · L GUY · A·R·I·B·A · ARCHT · LEWISHAM · S·E

UNIVERSITY OF ILLINOIS

NTEMPORARY MUNICIPAL ENGINEERS AND SURVEYORS.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

HE success attending our series of portraits of Contemporary British Architects, ilders, Surveyors, Art Manufacturers, Decorae Artists, and Sculptors has induced us to range for a further series, which will include me of the leading Borough Surveyors and City ngineers throughout the country. The import-t works and large contracts which constantly e supervised and designed by those holding the sitions we have indicated necessarily bring em into contact with a large number of our aders, and the interest in their portraits will, e know, be very general. In not a few instances ecial photographs have been taken for our ges, so as to bring the portraits chosen for ustration up to date. In arranging the subcts on our sheets we, of course, disclaim all ideavour to group them in any order of precence.

The present accompanying double-page plate mmences with the portrait of Mr. Edward ice Sweet Escott, M.Inst.C.E., borough engieer of Halifax, who was educated at Foyle ollege, Londonderry (under his father, the ev. Wm. S. Escott, principal of the college om 1854 to 1862). He served his articles ith Messrs. Frazer and Campbell, architects nd surveyors, of Londonderry. Mr. Frazer the time was county surveyor of North onegal. On leaving the firm in 1861, Mr. scott was engaged for nearly three years n the survey of the Grocers' estates in the unty of Derry, for Mr. Henry Wiggins, the gent of the company. In 1864 he was assistant rveyor under Mr. Richard Davids, the sureyor to the Corporation of Carnarvon, N.W. n October, 1865, he was appointed an assistant n the town surveyor's office at Birkenhead, nder Mr. Thomas Thorburn, C.E., where he emained three years. In August, 1869, Mr. Escott was engaged to check the trigonometrical rvey of the Borough of Halifax, which at that me was being carried out by contract, in four ections, under Mr. Peter Borvise, the borough ngineer, the contracting surveyors being Henry Roper, Dudley; William Brown, Newcastle; John Eddison, Leeds; and Daniel Kershaw, Halifax. The survey was completed about 1871, when Mr. Escott was appointed one of the district surveyors f the borough. At Christmas, 1872, he obtained he appointment of borough surveyor of Burnley, which he held for six months, and returned to Halifax in July, 1873, on being appointed borough urveyor to the Halifax Corporation, a position e still enjoys. Many important municipal vorks have been designed and carried out under his direction. He was elected a member of the Institution of Civil Engineers on December 6th, 1881. He has a seat on the Council of the Municipal and Sanitary Engineers and Surveyors' Association, of which society he has been a member from its commencement. Mr. Escott's photograph is by Messrs Maull and Fox.

Mr. E. G. Mawbey, Assoc.M.Inst.C.E., is the borough engineer of Leicester. He has of late been engaged carrying out the unfinished contracts of the very extensive sewerage, sewage disposal, floods prevention works, and bridges, designed by the late Joseph Gordon, C.E., whom he succeeded when that gentleman was appointed chief engineer to the London County Council, and in the preparation of the contract drawings, &c., for the remaining sections of those schemes yet to be carried out, involving a further expenditure of about £60,000. He has also himself, for Leicester, designed a storm outfall drainage scheme, estimated to cost about £70,000, and other works, including the refuse destructors, an iron highway bridge now being erected over the new flood channel, and a borough extension scheme to include the surrounding parishes to the extent of about 7,000 acres. From the year 1869, subsequent to his early training, Mr. Mawbey was engaged seven years by Messrs. Parnell and Son, of Rugby, superintending important engineering and architectural works at Birmingham, Birkenhead, Derby, Oxford, Rugby, and Reading, designed by some of our leading engineers and architects. He was next appointed an assistant to Mr. John Shaw, sanitary engineer and estate agent, of Derby, and after 18 months in this post he acted as resident engineer to the Brampton and Walton Local Board (Chesterfield), for their main sewerage and sewage disposal works, at the same time superintending also the erection of the George Stephenson Memorial Public Buildings at Chesterfield, and other works in that district and at Nottingham. In March, 1880, he was appointed engineer and surveyor to the Market Harborough Great and Little Bowden Local Board, and prepared and carried out main sewerage and sewage disposal schemes (Mr. J. B. Everard, C.E., of Leicester, acting as consulting engineer), also a floods prevention scheme, &c. In August, 1883, he became borough and water engineer of King's Lynn, and engineer to the Port and Harbour Committee of that town, and designed a new water-supply scheme, the new main sewerage for the borough, an iron bridge, the restoration of the old Town-hall, and other works. In May, 1887, Mr. Mawbey was appointed city engineer and surveyor of York, where he was specially associated with the eminent engineer, Mr. James Mansergh, assisting him in preparing the sewerage and sewage disposal scheme now adopted at a cost of over £100,000, and himself designed other important works, mostly carried out, including new municipal offices, restoration of the city walls and bars, alterations to the theatre, new covered market, a new lock for the River Foss, &c., and acted as professional assessor for the competitive designs for the York New Law Courts, police and fire stations, his awards being adopted and generally approved. Mr. Mawbey's portrait is by Messrs. J. Burton and Sons, of Leicester.

Mr. Arthur Brown, M.Inst.C.E., the borough engineer of Nottingham, is a native of that town, and was born in the year 1851. He was educated at the Nottingham High School, and in 1867 was articled to the late Mr. M. O. Tarbotton, who then held the office of Borough Engineer. Mr. Brown was in 1874 appointed deputy Borough Engineer, and, while serving under Mr. Tarbotton, was engaged upon a number of important works such as are usually carried out by large boroughs; among others may be mentioned a new bridge over the river Trent at Nottingham, and one over the same river at Gunthorpe; intercepting and outfall sewers and works generally connected with the utilisation of sewage, including the laying out of a sewage farm. On the retirement of his predecessor, Mr. Brown was promoted to fill the office of borough engineer in the year 1880. The extraordinary and abnormal growth of the town about this time rendered necessary the carrying out of many works. Among others may be mentioned an extensive system of street improvements in various parts of the borough, including, in one case, the laying-out and construction of a new road nearly four miles long and 60ft. wide; the extension of the sewerage system to provide drainage for the new property which was at one period being built at the rate of 3,000 houses per annum; the laying out of a new cattle-market; a scheme for preventing floods in a district of the borough; construction of depots, wharves, stabling, and other works to accommodate stock, plant, and horses; the extension of the system of subways in the town, in which are placed the sewers, gas and water pipes, and telegraph wires. Mr. Brown is now engaged upon the building of the new epidemic hospital, which will contain accommodation for about 90 patients. His portrait is produced from a photograph by Mr. A. Neale, of Nottingham.

Mr. J. H. Cox, M.Inst.C.E., was born at Bradford in 1848, and served his pupilage with Messrs. Gay and Swallow, architects and civil engineers, of Bradford, under whom he was employed on several works of importance, including the City Cemetery at Manchester, the Eccleshill and Bolton Gas Works, and the extension of the gas works at Shipley. In 1869 he was engaged under Mr. P. C. Lockwood, M.Inst.C.E., borough surveyor of Brighton, on the survey and drainage of that town, and in 1870 he became an assistant to Mr. Charles Gott, M.Inst.C.E., borough surveyor and waterworks engineer, Bradford. In the following year Mr. Cox was appointed deputy borough surveyor. In 1874, on the resignation of Mr. Gott, the appointment of borough surveyor was given to Mr John Allison, now city surveyor of Manchester, and the post of waterworks engineer was filled by Mr. A. R. Binnie, M.Inst.C.E., now chief engineer to the London County Council. On the resignation of Mr. Allison in 1879, Mr. Cox was appointed borough surveyor of Bradford, a position which he still retains. During his long service under the Bradford Corporation, the town has nearly doubled its population, and municipal works of a most important character have had to be undertaken in order to keep pace with its rapid growth. Street improvements have been carried out on a most extensive scale, involving an expenditure of more than £1,250,000, and the construction of several large bridges both in stone and iron. During the last 10 years the Bradford Corporation Tramways, 20 miles in length, have been constructed by Mr. Cox. These are leased to tramway companies and worked by steam traction. The following works, amongst others, have likewise been carried out by Mr. Cox, viz:—new cattle market, extension of wholesale market, extension of public abbattoirs, district baths and branch free library, four depots for the purification of town's refuse by fire, laying out Bradford Moor Park and Forster-square, stabling for 100 horses, and private street improvements amounting to upwards of £350,000. In 1882 the boundary of the borough was considerably extended; it now covers an area of 10,776 acres. The present population is estimated by the Registrar-General at 240,515, and the rateable value is £1,025,106. The portrait is from a photograph by Messrs. Appleton and Co., of Bradford.

Mr. John Parker, Associate Inst.C.E., the city surveyor and waterworks engineer of Hereford, is a native of Burnley, in East Lancashire, in which town he was twice elected a member of the town council in 1869 and 1872. In early life he was associated with the firm of Dent and Parker in the construction of railway works and buildings at Warrington, Manchester, Southport, Blackpool, Crewe, and elsewhere, for the L. and Y. and L. and N.W. Railway Companies. He was, in 1875, elected borough engineer of Bridgwater and waterworks manager, where, in addition to his ordinary duties, he designed and carried out the Albert-street Board Schools for 750 children, at a cost of £4,500, and other works. Since he received his present appointment in 1881, a water tower has been built and high-level water service has been installed under his supervision, considerable additions have been made to the markets, and some miles of new streets constructed to his plans. He has also been the acting engineer for the new outfall sewers and works (Mr. Cousins, of Westminster, being the consulting engineer), which have been recently completed at a cost of £40,000, and were formally opened by the mayor in May last, in the presence of the Association of Municipal Engineers and Surveyors, who held their district meeting in Hereford for that purpose. Other works contemplated, for which plans have already been prepared by Mr. Parker, consist of flood prevention works, new magistrates' court, filter beds and pumping machinery at the waterworks, &c. He is a Fellow of the Surveyors' Institute, and certificated by examination as a surveyor by the Sanitary Institute. The portrait is by Messrs. Maull and Fox, of Piccadilly.

Mr. R. Read, Associate Inst.C.E., the city surveyor for Gloucester, is a member of the Association of Municipal and Sanitary Engineers and Surveyors, a member of the Sanitary Institute of Great Britain, and a member of the Society of Arts. For the last eleven years he has filled the offices of Surveyor and Chamberlain of the City of Gloucester, and in addition to the ordinary duties of surveyor, has had charge of the city waterworks, and as chamberlain has had charge of the markets, park, cemetery, and corporation estate with a rent-roll of £4,200 per annum. Since his appointment, in 1878, the death-rate of the city has been steadily reduced from 24 to 14 per 1,000. In 1881, in order to avoid the necessity of an intermittent water supply and its attendant evils, he recommended the adoption of the Deacon Meter System for the detection of waste, as an alternative to a scheme for additional water-supply, estimated to cost £10,000. After considerable discussion, the suggestion was carried out in 1883, at a cost of £2,000. Besides the above, he has carried out a great many street improvements, a large amount of sewerage work, and the ventilation of the sewers. Mr. Read has relieved a portion of the city from frequent flooding, which caused great damage to a large number of houses, and threw nearly 1,000 men out of work for three days on each occasion. He also prepared plans, &c., for a new city quay and river wall adjoining the river Severn, for public baths, an infectious diseases' hospital for the city and port, and other works. Before coming to Gloucester he was for nearly three years—1876-1878—chief engineering assistant in the borough engineer's office, Salford,

partly under Mr. A. M. Fowler, M.I.C.E., the late borough engineer, and afterwards under Mr. Arthur Jacob, B.A., M.I.C.E., the present borough engineer. During this time the corporation were probably doing more work than any similar town in England, they having borrowing powers of upwards of one million sterling. Mr. Read took a leading part in designing and constructing bridges, 140ft. span, and 60ft. wide, over the river Irwell; a large intercepting sewer, from 5ft. to 8ft. 6in. in diam., seven miles in length, running right through the borough, crossing the river Irwell twice in its course, with a gradient of 3½ft. per mile; also a service reservoir to hold ten million gallons of water, the Salford tramways, street improvements, parks, and public baths; also plans for the precipitation and purification of sewage, since carried into effect. He was for nearly three years—from 1873-76—principal assistant in the office of Mr. S. B. Worthington, M.I.C.E., Victoria (now Exchange) Station, Manchester, Engineer of the Northern Division of the L. and N.W. Railway, comprising at that date the whole of the railway between Crewe and Carlisle, and Liverpool and Leeds. During that period he did a great deal of work in connection with the widening of the railway, and the enlargement and improvement of the stations, and other property of the Company at Warrington, Wigan, Widnes, Preston, Huddersfield, Liverpool, Leeds, Lancaster, Oxenholm, Carlisle, and other places. Previous to this he was fifteen years in London, part of the time as a pupil, and afterwards as assistant to Mr. C. P. B. Shelley, M.I.C.E., of Parliament street, Westminster, who, before commencing business for himself, was chief of the staff of the late celebrated firm of Fox, Henderson, and Co., of Birmingham, during the construction of the Great Exhibition of 1851, the Crystal Palace, Sydenham, and other large works. During this period Mr. Read gained considerable experience in connection with plans, &c., for engineering work of various kinds, both in England and abroad. Messrs. Maull and Fox, of Piccadilly, executed this portrait.

THE PROPOSED DETACHED BELL-TOWER FOR SAINT MICHAEL'S, COVENTRY.

ON Thursday in last week, Mr. Alfred Waterhouse, R.A., Mr. Norman Shaw, R.A., and Mr. Ewan Christian, who had been consulted as to the æsthetic effect which the proposed erection of a detached campanile to carry the peal of ten bells of St. Michael's Church, Coventry, would have on the famous group of spires in that city, paid a visit of inspection to Coventry. The visit had been postponed for a fortnight, it will be remembered, owing to the ill health of Mr. Christian. The following letter from Mr. George Woodcock had previously been addressed to Mr. Waterhouse, and a similar letter to his colleagues:—

"Having restored this church and steeple, in the course of which the lantern in the latter has been opened up, and the stone vaulted ceiling replaced therein at a height of 98ft., the vicar and churchwardens have been strongly advised that it would not be safe to replace the heavy peal of bells which formerly were hung in the tower. A project is now on foot to build a campanile for the purpose of carrying such bells, together with the clock and chimes, but a rather influential body of citizens, who were subscribers to the Restoration Fund, strongly object to a campanile on the ground that it would detract from the steeple of St. Michael's, and also from the tower and spire of the adjoining church, Holy Trinity. Under these circumstances it has been suggested that three eminent architects should be asked to act as assessors or experts, in conjunction with a committee of parishioners, such committee consisting of the vicar as the freeholder, two gentlemen opposed to the bell-tower, and two in favour of it, to decide—

"1. Whether a suitably designed campanile would detract from the beauty of the existing towers and spires.

"2. If thought not, then to select the site for such campanile, and

"3. To settle the terms of the proposed competition which it is intended to limit to five of the leading ecclesiastical architects of the present time, and subsequently to judge the designs.

"I have been requested by the vicar and churchwardens, who are in favour of the campanile, to ask whether you would, under the peculiar circumstances of the case, agree to act as an assessor or expert in conjunction with Ewan Christian, Esq., and R. Norman Shaw, Esq., R.A., provided these gentlemen will consent to do so, and I am writing in similar terms to each of them by this post. It would be necessary for you to attend at Coventry and inspect the *locus in quô*, which you could do either separately or in conjunction with the other gentlemen, but the remaining business could be transacted in London. I believe that in such matters it is usual to leave it to the decision of one assessor, but so strongly is the opinion in Coventry divided upon the subject that it has been thought advisable to obtain three eminent gentlemen, if possible, to act on this occasion. The two churches are close together, and it is very important not to erect in proximity to these a campanile which would not be in unison with the existing style of architecture, and which could in any way detract from the beauty of the existing towers."

In the afternoon, after visiting St. Michael's Church, the three architects were taken by Mr. Woodcock for a drive into the country around Coventry for the purpose of viewing the spires from a distance. Among the points from which views were obtained were Stivichall Hill and the Warwick-road, the London-road, and the Stoke-road. From the latter place the party drove along Payne's-lane, Lower Ford-street, and Priory-street to the churchyard, and from the churchyard back again along Ford-street and Hales-street, and round to the churchyard again. Priory-street, where the view is particularly open, they traversed several times, viewing and re-reviewing the churches and their surroundings with great care and thoroughness. They afterwards met the vicar and the churchwardens in company with Mr. Woodcock, and communicated to them the opinion they had formed. This was unanimously in favour of a new bell tower, which they considered would enhance rather than detract from the beauty of the existing towers and spires of St. Michael's and Holy Trinity. As to the site, they expressed themselves in favour of a point on the north side of the church and avenue somewhat to the east of the north door. The exact spot was, however, not determined upon, and awaits the formal report. The new tower, it was suggested, might be connected with the church by a dwarf building and an archway over the avenue. Under the archway it was suggested that an extra door on the north side should be provided, the architects considering that the means of entrance and exit on that side were inadequate. They also recommended that the tower be kept plain in the lower stories, all ornamentation to be put on the upper stories, and the bells to be hung at a height of about 80ft. Mr. Woodcock intimated that whatever the cost of the tower, he would only ask the citizens to subscribe £5,000; if it cost £10,000 he would contribute half; if it cost £14,000 he would contribute £9,000, and so on.

CHIPS.

The death is announced of Michael Stolz, the well-known Tyrolese sculptor, at the age of 70 years. His best work is a group in marble in the chapel of the cemetery at Innsbrück, representing the Crucifixion.

A new Roman Catholic Church at Middlewick, Cheshire, will be opened at Christmas-time. It is being built from designs by Mr. Edmund Kirby, of Liverpool.

Mrs. Webster has applied to the Archbishop of Canterbury for a faculty to erect a memorial in St. Dunstan's Church, Cranbrook, to the memory of her late husband, Mr. Thomas Webster, R.A.

To perpetuate the memory of the late Sir William Pearce, M.P., the naval architect, who was a native of Old Brompton, Kent, a massive tomb has just been raised over the family vault in Gillingham Cemetery, in which his remains lie. It is Roman in character, is of Scotch granite, and weighs over thirteen tons.

New premises have just been completed in Penzance for the Cornish Bank, on the site of the old one in Queen's-square. The style adopted is Ionic, and the front has five granite pilasters. Mr. J. W. Trounson, of Penzance, was the architect; and Messrs. W. Winn and Son, of Helston, executed the contract.

On Tuesday week an inquiry was held at St. Mary's Hall, Coventry, by Colonel W. M. Ducat, R.E., Local Government Board inspector, into the proposed purchase by the corporation of property in Earl-street and St. Mary's-street for municipal buildings. The clerk (Mr. Thomas Browett) and the city surveyor (Mr. E. J. Purnell) gave evidence as to the necessity for improved municipal buildings and the eligibility of the site sought to be acquired.

A new steam roller mill has just been built at Alford, Lincolnshire. It is four stories in height, and has cost, with the detached chimney, 75ft. high, but without machinery, £4,000. Messrs. Hasnip and Clayton were the builders.

The Broomhill Board School at Sheffield was reopened last week after having been enlarged for the fourth time. The building was the second school erected by the Sheffield Board, and, with the addition just made of 192 school places, accommodates 711 children, the total cost having been £8,521, or £11 19s. 8d. per head.

Building Intelligence.

IPSWICH.—Additions have recently been mad to the already numerous business premise belonging to Messrs. R. and W. Paul, of thi town. The malthouse is situated on a portio of the site of the old Eagle Foundry, and extend 190ft. back from the public quay. It consists o a five-storied building, for 150 quarters steep with two kilns at its eastward end. An elevato is provided from the barley stores on dock front also skip-lifts from the cistern and for loadin the kilns, all of which, with Boby screens, &c. are driven by a 10H.P. gas-engine. On eac story of the malthouse there are several lines o hanging skip tramways for distributing the we grain upon the floors. The grain-cleaning fac tory is a four-storied building, about one-thir of which is occupied by steam-driven machinery effecting thirteen separations of the grain an removing foreign matters. The whole of th buildings were designed by Mr. Thomas Miller M.Inst.C.E. and engineer to the Ipswich Doc Commission, and the contractors were Mr. Fred Bennett for the malthouse, Messrs. Cocksedg and Co. for the machinery, and Mr. R. Girlin for the grain-cleaning factory.

LEITH.—On Saturday a new board school, t be called Couper-street Public School, wa formally opened at Leith by Lord Young. The site of the building lies between Couper street and North Junction-street, and measures ¾ of an acre, being the largest school site in the town. The school, which is built of red and white sandstone, will accommodate about 1,88 pupils, and the cost will be about £14,000, exclusive of the site. The main building measures about 127ft. by 75ft. 6in. deep, and consists of three floors, the roof being quite flat. On the ground floor, which is reached by short corridors, is a central hall 82ft. by 22ft., and on the same floor are nine classrooms for infants and the junior department. On the first and second floors are similar central halls, each having ten classrooms branching off. The building externally is finished with a deep cornice and an iron cresting, while the dressings are of red sandstone, and the rubble of white sandstone. There are two playgrounds and a janitor's lodge. The architect was Mr. George Craig; the builder, Mr. William Baxter, Leith; the carpenter and joiner, Messrs. Drysdale and Gilmour, Leith; and the plumber, Mr. Thomas M'Pherson, Leith.

LEWANNICK.—The parish church of Lewannick, some miles from Launceston, a large Late Perpendicular structure, was gutted by a fire in January. The only portions not destroyed were the external walls, portions of the columns which divided the nave from the aisles, the font, an ancient cresset stone, the roofs of the two porches, the vestry, and a part of the reredos. All the rest of the timberwork, the internal fittings, and the timberwork and bells in the tower were consumed. The instructions given to the architect, Mr. Otho B. Peter, of Launceston, were to rebuild as near the original design as funds would permit. Tenders were invited, and that of Mr. W. Burt, contractor, of Launceston, accepted. The four-centred moulded south aisle arcade columns of Polyphant stone, which the fire had cracked and split in every direction, and the injured granite columns of the north arcade, have been reproduced by Mr. Nicholls, of the Polyphant quarry, which quarry is within the parish. While digging the foundations of the south columns the base stones of circular columns of the 12th century were discovered. The new roofs follow the lines of the old ones, being waggon-shaped; they have at the intersections carved bosses, executed by Mr. Hems. The old oak seats, which had carved ends, have been replaced by plain ones of pitch pine. In the western end of the north aisle is placed the well-known cresset stone, which escaped injury, and in the tower are hung six new bells cast by Messrs. Mears and Stainbank.

SALFORD.—The Salford Borough Council at their last meeting accepted the tender of Messrs. R. Neill and Sons for the general contract, amounting to £7,897, for the new Regent-road Baths, Salford. The designs are by Messrs. Mangnall and Littlewoods, architects, Manchester, and were selected in a competition. The land is a rectangular plot situate at the corner of Regent-road and Derby-street, and is well

adapted for its purpose, being in a populous neighbourhood. Broughton is also having new baths erected by the same architects, which are situated in Great Clowe-street, and are advancing rapidly towards completion.

Engineering Notes.

Bristol.—The town council of Bristol received, on Tuesday, a report from the Fixed Bridge Committee, stating that they had employed Mr. Francis Fox, C.E., to prepare the Parliamentary plans and sections necessary to be deposited on or before the 29th instant, in order to obtain Parliamentary powers to erect a fixed bridge in lieu of the drawbridge and to cover in the water space above the bridge. Mr. Fox, in his report to the committee, explained that the works for which powers would be sought would include a fixed bridge 100ft. in width between the parapets, of which 10ft. on either side would be allotted to footways. The span of the arch would be 130ft., and the height near the level of the floating harbour would be 8ft. 6in. in the centre. The plans also provide for the construction of an archway for the conveyance of the waters of the Froom from the stone bridge to the archway of the fixed bridge, and the filling in of the present water space above the drawbridge to the general level of the adjoining quays. Mr. Fox's estimate for the two works is £24,090.

COMPETITIONS.

London County Council Municipal Lodging House for 320 Men.—In this competition 75 designs have been received, and the drawings are now being arranged for the inspection of the assessors, Mr. Ewan Christian and the architect to the Council.

Oswestry Municipal Buildings.—In this competition, in which Mr. T. M. Lockwood, of Chester, acted as assessor, twenty-six plans were sent in. The plan by Mr. Henry A. Cheers, 32, Waldegrave Park, Twickenham, was awarded the first premium of £50, and that of Mr. Thomas E. Pryce, V.P.A.A., 35, Bedford-row, W.C., the second of £20. At a meeting of the Oswestry Town Council, held on Monday, the plan of Mr. Cheers was definitely adopted, the premium in that case, as laid down in the condition, merging in the architect's commission of 5 per cent. The limit of cost, including fittings of court and council chambers, lavatories, and gas, was set in the conditions at £6,200.

CHIPS.

A marble mosaic pavement is being placed in the entrance hall of the town hall at Warrington. The work is being carried out by Messrs. J. and H. Patteson, of Manchester.

At a meeting of the Leeds Corporate Property Committee, held on Monday, a report was presented from the Sanitary Committee with reference to the state of the drainage of the town hall. Dr. Cameron reported to the committee that the sanitary condition of the town hall was most unsatisfactory. A lengthy discussion ensued, and it was ultimately decided to refer the matter to the Corporate Buildings Committee.

Ten more stalls, making 24 altogether, have been given to the new choir of Peterborough Cathedral. Double the number will complete the set of the Benedictine plan.

Messrs. A. Lethbridge and Son, of the Tracey Building Yard, Plymouth, have obtained the contract for the erection of the Private Patients' Hospital at Woodside, Plymouth, a company for the building of which has recently been formed. The work will commence immediately.

The city council of York have obtained the sanction of the Local Goverment Board for borrowing £89,000 for the purposes of the new municipal offices and other works of improvement.

The parish church of Clifton-on-Dunsmore, near Coventry, is about to be restored. The church, which is of the Early English and Perpendicular periods, will retain its architectural features externally, but internally it will be entirely remodelled, and provided with new seats and fittings. It will also require a new roof. The lay rector undertakes the restoration of the chancel at a cost of £500, and a new vestry and organ chamber will be built on the north side. Messrs. Bodley and Garner are the architects.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India (viâ Brindisi), £1 10s. 4d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph Advertisement inserted for less than 5s.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLI., XLIX., L., LI., LIII., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

THE NEW YEAR'S DOUBLE NUMBER

of the Building News will be issued on Jan. 3, 1891. The space for extra advertisements is very limited this year, and insertion cannot be guaranteed after Dec. 14, by which date at latest it is respectfully requested all orders may be forwarded.

Free Classic. (Yes, Mr. Norman Shaw, R.A., won the Royal Academy Gold Medal in 1853, when his design for a Wellington College was published in the *Illustrated London News* for Dec. 31st that year.)

"BUILDING NEWS" DESIGNING CLUB.

Drawings Received.—"S. Edmond," "Black Prince," "Granite City," Obbiks," "Etudiant," "Minerva," "Snowball," "M.P.," "Sine Nomine," "Ancient Lights," "Venice," "Brook," "Ate," "Sol," "Light," "Spider and Fly," "Camera," "I. C. Y.," "Albyn," "Juno," "Horseshoe," "Hope," "Aries," "Æneas," "No Cards," "Bladud," "Marmion," "Flint," "Organist."

SECOND LIST OF SUBJECTS.

B.—A small detached country house fronting the S.E., suitable for a City man, comprising a dining-room, 22ft. by 17ft., or thereabouts; a drawing-room, 20ft. by 18ft.; a library, 14ft. square; a roomy, but not wasteful, entrance hall and porch lobby. The kitchen and offices to be in proportion to the requirements of such a house, and their position in reference to the gardens is to be considered. A small two-stall stable with small coach-house and loft to be provided adjoining the house, with a stable yard measuring, say, 20ft. square. Upstairs the accommodation of the house is to provide six bedrooms, a bath-room, with w.c., and housemaid's closet. Two extra bedrooms may be on a second floor with a box-room. Scale, 8ft. to the inch for elevations and sections, and 16th scale for plans. Sketch to be provided. Style suitable for a stone district.

Received.—F. A. L.—J. M. and Co.—A. W. G.—R. T.—Inquirer.—N. G. and W.

Correspondence.

FORGOTTEN AMERICAN CITIES.

To the Editor of the Building News.

Sir,—Rather more than two years since I visited a once swampy district on the shores of one of the great fresh-water lakes of North America, scarcely above the level of which a dismal morass extended for many miles. Skunk cabbage and wild garlic then abounded, a sluggish stream struggled into the lake; but the neighbourhood had attractions upon account of its great hunting and fishing facilities; beyond these, however, there could have been no inducements for any settler to take up an abode in so wretchedly uninviting a locality.

About 150 years ago a venturesome European erected a log hut in this unwholesome place, and then commenced a struggle not only against unsavoury conditions of existence, but also a contest against the Red Indian. In course of time two or three other log huts followed, to provide for a few further residents. Later on the military strategical advantages of the spot were observed by the American Government, a fort (also of logs) was erected, and a few soldiers held this solitary position; but upon one occasion, at least, suffered massacre and defeat at the hands of the savages.

It has been stated that the selection of this site for the fort was the result of a misunderstanding, and that a wholesome and pleasant locality not very far away had been intended; probably the dangers and difficulties of travel in the old days led up to the error.

The above is a brief description of the site of the great city of Chicago until within a comparatively recent period.

If Chicago had not already been described as "The Garden City" it might now well be called the "City of Palaces," for few modern cities can excel it in the extent of its parks or the magnificence of its buildings, yet in the year 1773 a large tract of land (including the site of the present city) was purchased for five shillings and "certain merchandise" from its red proprietors!!

Inquiries into the early history and past civilisation of the red races of America lead to a strong presumption that the partially civilised nations and tribes inhabiting these regions at the period of the arrival of the Europeans were generally not a people emerging from a state of barbarism and slowly working up in the social scale, but that, on the contrary, they were descendants of a more civilised race gradually sinking from a high position, while some, having outsped the others in their downward career, had already sunk into the condition of savages.

The American tribes appear, indeed, to be singularly strange, and to stand at a vast distance from the rest of mankind, yet their traditions, tongues, manners, and customs, and the remains of their buildings present many positive and incontestable points of analogy with Asia and its people; but the civilisation now flourishing in most parts of America is in no way connected with its past history or the ancient inhabitants. It has, on the contrary, proved the most inveterate foe of both—with contemptuous superiority, leaving the first almost unheeded until of late years, while, with relentless cupidity, it has persecuted the latter almost to extermination in some districts. At the same time, it may be considered doubtful whether these races generally are disappearing so fast as is popularly believed. Colonel Garrick Mallory, of the United States Army, recently read a paper before the American Association for the Advancement of Science, in which he defended the opinion that the Indian population, as a whole, has not greatly decreased since the earliest occupation of the country by Europeans.

Of late years, a few American architects have given considerable practical attention to ancient American remains of buildings, and amongst the various ruins of Central America (particularly in Mexico, Peru, Honduras, Guatemala, and the peninsula of Yucatan) old cities exist, often richly decorated with sculpture, affording appropriate American precedents for modern American architecture, and including very much of great interest upon ground that has not been trodden so much as might have been the case had the localities been easy of access.

At present the question of the first appearance of the human race in America is beyond the limits of history, and extremely hazardous as is the desire to explain everything or to supply gaps (and there are many points which appear obscure, or which we must leave unexplained), yet we may not unreasonably suspect that a portion of the old civilisation of America was derived from Phœnician pilots driven from their course during voyages of discovery around Africa, or who were induced to attempt the passage of the Atlantic for similar reasons to those advanced by Columbus.

Amongst certain ruined cities in Mexico sculptured tablets have been discovered; these exhibit figures apparently making offerings to a hideous mask. The objects offered are infants, and are

presented to the mask seated on the palms of men's hands. Now, the rites of the heathens were intended either to propitiate the malignant powers of darkness or to obtain by their agency assistance or some supernatural power; or, on the other hand, to conciliate the favour and appease the anger of the deity, and for this object the heathens shrank from no expedient, deemed no price, no victim, too costly, as the existence of human sacrifices, and especially the sacrifice of children, sufficiently proved; and it is a curious coincidence that this species of human sacrifice was most widely diffused among all the Phœnicians, for with them the idol Moloch, heated from below, grasped in his glowing arms the infant victim. Even in Carthage this cruel custom is said to have long prevailed.

Amongst American ruined cities no remains exist of the dwelling-houses of those classes which in all periods have formed the bulk of the population of a city; what are left being chiefly the palaces of princes, or temples of the gods, or works of fortification and water supply.

An ancient American civilisation has utterly passed away, and although its numerous ruins are scattered in various parts of the continent, little else is left to inform us that a great people existed; the new and magnificent civilisation of the America of to-day may in its turn be as obliterated and forgotten as the ancient cities of Mexico; Chicago again a nameless swamp, with, perhaps, a few ruins exhibiting those strong and indisputable evidences of antiquity which nature may raise as monuments to the memory of past architectural greatness.

GEORGE H. BIBBY,
Nov. 24. F.R.Hist.S., F.R.I.B.A.

CHIPS.

At a meeting of the St. Paul's Ecclesiological Society, held on Wednesday evening at the Chapter House, St. Paul's, a paper was read by Mr. J. Grimshire on "The Abbey Churches of England, both Perfect and Ruinous, with Special Reference to, and Suggestions as to the Treatment of, the latter." The lecture was illustrated by nearly a hundred lime-light views.

The London County Council have accepted the offer of 12 acres of river-side land, adjoining the Palace of the Bishop of London, at Fulham, as a public recreation ground. An expenditure of £1,500 on laying out the grounds was approved, but not a proposal to inclose them by a concrete wall, estimated to cost £8,800.

The Glasgow Police Commissioners have appointed Mr. G. Alsing, of Sheffield, as engineer, in connection with the proposed Parliamentary Bill for sewerage works for the eastern district of the city.

The new Soldiers' Home at Piershill, Edinburgh, was opened on Monday by Lady Ashburton. The building has cost £2,700, and has been erected under the supervision of Mr. W. Allan Carter, of Edinburgh, who acted as honorary architect to the committee.

Large additions are to be made to the workhouse at Woolwich, at a cost of over £7,500. Mr. J. O. Cook, of Woolwich, is the architect, and the contract has been taken by Messrs. Kirk and Randall, of the same town.

Last Saturday at the Royal Hotel, Brighouse, Yorks, the workmen engaged in the erection of billiard-room and other additions to Bonegate House were entertained to supper. The new building, which is now approaching completion, has been erected from plans prepared by Messrs. George Hepworth and Son, Brighouse, and is 43ft. by 23ft. 6in., the billiard-room occupying a space of 20ft. by 25ft. On the second floor are bedrooms. The contractors are:—Masons, Messrs. John Bottomley and Son; joiner, Mr. Thos. Bottomley; painters, Messrs. Hirst and Barraclough; plasterer, Mr. C. Heponstall; and ironwork, Messrs. Beckwith Brothers.

St. Lawrence's Church, Kirkby Sigston, near Northallerton, was reopened on Thursday in last week, after undergoing restoration. It has been found necessary to pull nearly half of it down and rebuild it. The architecture is Norman and Early English. About 80 years ago a so-called restoration took place, and it has been the aim of the present restoration to restore the features then obliterated. The work has been executed by Messrs. Simpson and Malone, of Hull, under the direction of Mr. Temple Moore, of Hampstead, architect. The whole of the nave has been entirely reroofed, and a great part of the north aisle rebuilt; new windows have been put in, and as far as possible the Norman design of the old ones followed. The chancel roof has been repaired, and the old high-backed pews have been replaced by chairs. The cost has been £1,100.

Intercommunication.

QUESTIONS.

[10447.]—**Cleaning Chalk Drawings.**—Will any of your numerous readers inform me how to clean chalk drawings?—A. B. C.

[10448.]—**Malling Abbey.**—Are the Pointed arches in the lower part of the west front of Malling Abbey, Kent, insertions or original work? I cannot find mention of the supposed earliest example of its use in Gwilt's, and Parker gives his earliest as Malmesbury Abbey, Wilts, 1115-39, and Fountains Abbey, Yorks, about 1132. Malling he gives as previous to 1087.—DREYHELLER.

[10449.]—**Compulsory Powers of Local Authorities.**—Is it in the power of any corporation to compel a private person or body (trustees) to give up a portion of their land for the purpose of street improvements without equitable compensation?—DREYHELLER.

WATER SUPPLY AND SANITARY MATTERS.

BERKHAMPSTEAD.—A joint committee for Berkhampstead and Northchurch met on Wednesday week, to appoint an engineer for the sewerage of the district. The selected candidates were Mr. John Anstie, Westminster; Mr. H. Bancroft, Manchester; Mr. Alfred M. Fowler, Stockport; Mr. William Gallon, Islington; Mr. H. G. Huxley, Westminster; Mr. Nicholson C. Lailey, Westminster; Mr. W. H. Radford, Nottingham; Mr. Urban A. Smith, Westminster. Mr. Fowler having been formally proposed, Dr. Batterbury proposed Mr. Huxley, who, he said, was an experienced engineer, and undertook at 3½ per cent. on the cost of the work done what others would charge 5 per cent. The result of the voting was that Mr. Fowler received seven, Mr. Huxley two, and Mr. Urban Smith two votes. Mr. Fowler was accordingly elected engineer. Mr. Fowler was afterwards asked what would be his charge for preparing a scheme and preliminary plan and specifications, with approximate estimate of cost of the works, and details ready for a contractor, and to give evidence in support of such scheme at a public inquiry—supposing the scheme should not be accepted. After discussion and consideration, Mr. Fowler undertook the same for £100, to be merged in the commission in case the works were carried out, the cost being estimated at £13,000.

WEST ARDSLEY DRAINAGE, YORKSHIRE.—The rural sanitary authority of the Wakefield Union having considered a scheme prepared by their engineer, Mr. Frank Massie, Assoc. M. Inst. C.E., for the drainage of the Westerton and Lower-street hamlets of this township, resolved at their last meeting to apply to the Local Government Board to sanction the borrowing of £2,800 for the completion of a portion of the works, comprising the construction of outfall sewer with outfall works for the Westerton drainage area, and for the purchase and preparation of two acres of land for the treatment of the sewage from Lower-street.

A long range of industrial dwellings, four stories in height, is being built in Wassail-square and Church-street, Swansea, by an artisans' dwellings company. The street frontages on ground floor are occupied by shops, and the flats above are divided into sets of two, three, and four rooms to a tenement.

For the past month the work of removing the National Museum of the Antiquaries of Scotland from the Royal Institution to its new home in the National Portrait Gallery at Edinburgh, has been in progress under the direction of the Scottish Board of Manufactures. The library, which is lodged in one of the upper galleries, has been completely transferred and arranged. The scheme of rearrangement proposed by the curator, Dr. Joseph Anderson, will in a general way locate the historical articles on the ground floor, the pre-historic on the first floor, and the comparative collection on the upper floor. On the ground and first floor the articles will be entirely Scottish. The portraits belonging to the society will be hung in the council-room.

The London School Board have received a report from their architect, Mr. T. J. Bailey, suggesting whether two types of schools should not be adopted for erection on the majority of the sites. The latest schools erected include the requirements in a public elementary school, and Mr. Bailey suggests as the best and most complete models Halford and Langford-road for a school of 1,200, with power of enlargement to a complete school of 1,600; and Trinity-street for a school of 800, with power of enlargement to 1,200. These schools are now, in fact, being duplicated (with slight modifications to make them more perfect) on several sites, and the drawings being already practically completed, they could be copied for many, if not all, the sites upon which it is proposed to build, requiring only the ground-plan to be specially drawn in each case to suit the particular conditions of the site.

LEGAL INTELLIGENCE.

LONDON COUNTY COUNCIL v. JAMES MACKINTOSH. (Before Mr. Kennedy, the Magistrate of the Woolwich Police Court).—This action was brought by the London County Council against Mr. Mackintosh, the lessee of some building property fronting Albert-road, North Woolwich, to compel him to put back the dwarf wall of the fore-courts to some dwellings recently erected alongside the said road, as not being 20ft. from the centre thereof. The road was made up and taken over by the local board two years ago. It has a footpath on the side adjoining the buildings, but none on the other side, which is merely the fence of the North Woolwich Railway, its total width being 31ft. Mr. Mackintosh is the building lessee of the lands, which belong to Messrs. Kennard, and has built three terraces of artisans' dwellings to front the same about 8ft. inside the fence dividing the road from the property, and had put up a dwarf wall (which he had intended to continue the whole length) in front of the houses, 2ft. inside the road footpath and parallel with the old fence, thus voluntarily giving up a strip of land to the road, which, it was claimed, was not a new street or road within the meaning of the Metropolitan Building Acts. The London County Council served him with notice to pull down the same, and summoned him for not doing so, claiming that it must be put back to 20ft. from the centre of the road, or about 3ft. more than he had arranged, which he declined to do, acting on the advice of Messrs. Tapp and Jones, of Westminster, the surveyors for the owners. The case, on behalf of the lessee, was argued by Mr. Scrutton, barrister, and in the result the magistrate dismissed the summons, with £5 5s. costs against the London County Council, and refused to grant the latter a case for appeal.

SKY-SIGNS AND THE BUILDING ACTS.—Mr. George Rolls, landlord of the Lord Elgin Hotel, Maida-vale, was summoned on Friday by the London County Council to the Marylebone Police-court, for having had erected over his house a structure known as a "sky-sign," the same being of a movable or temporary character, without having first obtained a license. After hearing a Mr. A. Duvaston, surveyor under the London County Council, and Mr. Lewis Solomon for the defence, Mr. G. A. Sage, the patentee of the invention, and Mr. Forest Fulton, who contended that section 13 of the Act of 1855 under which the information was laid, referred only to wooden statues, and not to iron signs, Mr. Mead held that the sign in question was not of the kind described, and dismissed the summons, with £2 4s. costs.

According to a return which has just been issued at the instance of the Water Committee of the Liverpool Corporation, the expenditure on the Vyrnwy scheme up to the 30th September last amounted to £2,040,689 10s. 2d.

Under the title of "Christian Art in London," Mr. Everard Green, F.S.A., describes in eulogistic terms, in the *Tablet*, a new window put into the east end of the Chapel of the Holy Ghost in the Church of Our Lady of the Angels, at Bayswater, from a design by Mr. J. F. Bentley. The subject is the Descent of the Holy Ghost on the day of Pentecost.

New Wesleyan schools at Horwich, near Bolton, were opened last week. They have cost £3,035, and accommodate 600 scholars. The style is simple Gothic, and the building was erected from designs by Messrs. Woodhouse and Morley, architects, Bolton. The contractors were as follows:—Stonework and brickwork, Mr. W. Dougill, Horwich; carpenters and joinery, Messrs. Moore Brothers, Rawtenstall; slating, Messrs. Warr and Co., Bolton; plumbing, Mr. R. Cuerden, Bolton; and plastering and painting, Mr. A. E. Warburton, also of Bolton.

The annual concert and soirée of the Edinburgh Branch of the Scottish National Operative Plasterers' Federal Union was held on Friday night at the Oddfellows' Hall, the chair being taken by Mr. Geo. Washington Browne, architect. There was a crowded attendance. Speeches were made by the chairman and Mr. H. F. Guthrie, general secretary of the Union, congratulating the society on its position, and on the present prosperous state of the trade.

A special meeting of the Malmesbury municipal council was held on Thursday in last week, to consider applications in answer to an advertisement by the town clerk for persons desirous of fulfilling the offices of borough surveyor at £20 per annum, and inspector of nuisances at £30 per annum; the person elected to devote the whole of his time to the duties of the offices (which included the collecting of the municipal rates of the borough). There was, as was to be expected, a full meeting of members to distribute this unprecedentedly valuable piece of patronage. Applications were received from Mr. Jacob Angell (the borough surveyor), Mr. Frank Price, and Mr. Jabez Emery, the last two inclosing testimonials. After a long discussion, Mr. Angell was elected.

Our Office Table.

The disclosures in the recent action against Wall Brothers formed the subject of several questions put at the meeting of the London School Board yesterday (Thursday). In reply to Mr. Sharp, Mr. Helby, the chairman of the works committee, gave a *résumé* of the report of the Special Committee presented two years ago, adding that many of the recommendations of that committee had since been carried into effect. As to the possibility of similar irregularities and discrepancies occurring now, Mr. Helby answered that it depended on circumstances over which personally he had no control. Replying to Mr. Lobb, Mr. Helby said that, at a meeting of the Special Committee in March, 1888, he asked Mr. E. R. Robson, the late architect to the Board, if he considered himself entirely responsible to the Board for the proper construction of the schools built under his superintendence, and received the answer "Certainly." A resolution was adopted by the Board in July of that year calling upon the late architect to make good the loss resulting from the absence of proper foundations at Broad-street school. Although that resolution had not been rescinded, no action had been taken, in consequence of a report by the special committee that the opinion of counsel taken as to defects at Queen's Head School was that the builder alone could be made responsible, and that as the builder in question was bankrupt, the best course would be to prove in the bankruptcy, and then, after the builder had obtained his discharge, to sue him for the balance on the ground of fraud.

At the same meeting of the Board, Mr. Sharp pointed out that, owing to the large increase of school accommodation ordered during the past two years, no less than 33,067 school-places on eleven sites had been waiting to be planned; of these only 448 places had been provided. The work had evidently grown far beyond the powers of the architect's staff to provide, and even the mode of duplicating the plans of existing schools now proposed by Mr. Bailey, their architect, would fail to cope with the serious arrears in his department. He therefore moved, "That the Works Committee be instructed to have six new schools planned and built under the superintendence of three 'outside architects,' in addition to those schools to be duplicated, in accordance with the scheme proposed by the architect of the Board." The Rev. W. Copeland Bowie, in moving as an amendment that the Board adhere to its present practice, asserted that if outside architects were called in, each school would cost £1,000 extra, while their experience of schools planned by outside architects had shown them to be at least as costly for repairs and re-drainage as any designed by their late or present architect. Mr. Barnes deprecated going outside for architectural help. Either their architect was competent or not. If competent, they should provide him with more draughtsmen; if incompetent, which he denied, let them say so, and get a fresh professional adviser. Mr. Laing said Mr. Sharp's proposal was in the interests of Mr. Bailey, who was overworked, and had had to forego his vacation this year. It was a proposal designed to meet a temporary congestion, and was not a permanent measure. He objected on principle to the duplication of plans, and held if outside architects were called in, their own official would have leisure to visit existing schools, and ascertain the defects, and where they could be improved. The Hon. Lyulph Stanley said what was wanted was not better plans, but more effective supervision and wider competition among builders, and the passing of that resolution would delay, and not expedite, the work. Mr. Helby said no schools had stood so long as those designed by outside architects. Mr. Robson had suggested, since his own retirement, that the Board ought to have appointed a consulting architect, and have invited plans from independent architects. After a long and animated discussion, the amendment was carried by 24 votes to 13. The present practice of the Board will therefore be continued.

The London County Council have given notice of their intention to bring in a Bill of a comprehensive character dealing with "sky-signs," which, according to the magistrate at Marylebone, cannot be touched under the provisions of the existing Building Act and its numerous amendments. The Bill, if passed, will confer power on the Council "with respect to the exhibition of words, letters, models, signs, devices, or representations in the nature of advertisements, announcements, or directions, elevated or suspended so as to show against the sky from any street or public place, all of which are included in the term 'sky-signs.'" It also gives power to regulate and control existing sky-signs, and to prohibit the use of sky-signs in future; to provide for the inspection and survey of existing sky-signs by the district surveyors, or other persons appointed by the Council; to prohibit the maintenance of any existing sky-sign, except in pursuance of a certificate of its safety and of a license by the Council; to provide for the summary removal of sky-signs structurally defective or dangerous, and to authorise the Council and their officers to execute all such works as may be necessary for the purpose; to prohibit any addition to or alteration of a licensed sky-sign otherwise than with a license of the Council, to authorise and provide for the payment of fees for inspections, survey, and otherwise, and to make provision for enforcing the provisions of the intended Act by penalties or otherwise.

The third annual exhibition held under the auspices of the South Wales Art Society was opened in the Public Hall at Cardiff by Lord Windsor on Wednesday week. The chief works are the "Cupid and Psyche," by F. H. A. Parker, a subject suggested by a passage in Lewis Morris's "Epic of Hades"; H. Stacey Marks's "From Sunny Climes," which we have seen at the Academy; "Passing Shadows," by Herbert C. Sheppard; a View of the Glamorganshire Coast near Porthcawl, which was hung at the Salon this year. Other prominent works are Highland landscapes by Charles Jones, R.C.A.; a portrait of Mrs. Greaves by Seymour Lucas; sketches of street arabs by Mrs. H. M. Stanley (née Dorothy Tennant); and paintings by Mr. and Mrs. Edwin Seward, T. H. Thomas, H. Parker-Hagarty, and J. A. Sant. Among the water-colours, those by Walter Severn, J. Hodson, Jackson Curnock, and George Hayes are worthy of notice.

The second concert of the session of the A. A. Lyric Club was held at the headquarters, Mona Hotel, Covent-garden, on Tuesday, 25th inst. The following gentlemen contributed songs:—Messrs. R. G. H. Wills, W. J. Dyer, H. O. Cresswell, F. Christopher, J. Watson Slack, and Captain Anderson; Mr. S. B. Garcia gave some recitations, and Messrs. C. D. Imhof and E. A. Lambert delighted their hearers respectively with piano and violin solos. The president, Mr. W. Burrell, occupied the chair, and Messrs. Theo. Moore and W. Henry White were responsible for the arrangements. The next concert will take place on 18th December next.

Warrant was granted at the Edinburgh Dean of Guild Court on Friday to the Lord Provost, Magistrates, and Council of the city to make certain alterations at the Corn Market building, Grassmarket. What is proposed to be done is—(1) to convert the two vacant upper flats of the building into dwelling-houses; and (2) to convert a part of the second and the whole of the third floor of the tenement immediately to the west of the building into dwelling-houses. The alterations will consist of the lowering of certain floors, the insertion of steel beams, and the erection of brick and wood partitions, with the incidental work in connection therewith. The contract for the erection of this Corn Exchange formed the subject of an interesting and erudite paper read by Mr. T. M. Rickman, F.S.A., before the Institute of Builders in February last. He showed that the Exchange was built in 1754 under an extraordinary contract, the parties to it being the Dean and Guild of the city on the one part, and the mason, three wrights, and one John Fergus, architect, all of Edinburgh, on the other, and the latter tendered to do the works for £19,707 16s. 4d., and to take the land forming the site off the hands of the city at £11,749 6s. 8d., making up a total sum of £31,437 3s. The tenderers, including the architect, seemed to undertake this as a speculation, and both architect and surveyor were apparently paid by the builders. The premises now about to be altered correspond, with singularly few variations, with the plan and elevation given with the contract, and in the minuter details the specification was evidently scrupulously carried out. The Exchange was, however, never used for its proper purpose, and it was therefore sold by the corporation in apartments to a multitude of people, whose descendants are now the freeholders.

"Some of the Old Halls and Manor Houses of the County of Norfolk" is the title of an interesting and capitally produced small folio of pen-and-ink sketches just published (with a map of the county), from the pencil of the late Mr. Edward Preston Willins, A.R.I.B.A., an architect in practice in Norwich. The book, we learn from the editor's preface, was almost ready for publication at the time its author died, and at his wish Mr. Thomas Garratt, A.R.I.B.A., of Shepherd's Bush, has completed it, adding two or three useful plates, and enhancing the value of the work by concise and practical descriptive notices of the buildings represented. These include a very good choice of typical subjects, such as Arminghall, Barnham-Broom, Barningham, East Barsham, Blickling, Breccles Old Hall, Caister Castle, Great Cressingham Priory, Felbrigge Hall, Hautbois Hall, Kirstead, Mannington Hall, the Dolphin Inn, Norwich; Oxnead Hall, Rainthorpe Hall, Stanfield Old Hall, Stiffkey Hall, Thurton Hall, Great Witchingham, and stepped gabled houses at Wroxham, besides several other good old buildings. The topographical character of such a book is undoubted, and although the drawings, like the specimens, vary considerably in merit, the author did his best to make them thoroughly representative, and they speak well of his industry. Mr. T. Garratt has spared no pains to do his friend's work ample justice.

The death of William Bell Scott, LL.D., H.R.S.A., poet, painter, etcher, and man of letters, occurred on Sunday at Penkill Castle, Ayrshire. Born in 1811 at St. Leonard's, Edinburgh, deceased was the son of Robert Scott, the engraver. He entered the Antique Class of the Edinburgh Academy for the Advancement of Art. In 1832 he drew from the antique in the British Museum, and, six years later, exhibited at the British Institution his first noteworthy picture, entitled "The Old English Ballad Singer," a scene with many figures. In 1844, at the request of the Board of Trade, he undertook the establishment of a school of art at Newcastle-on-Tyne, and while there he published his "Memoir of David Scott," "Antiquarian Gleanings in the North of England," and "Ornamental Designs for Silver and Gold Work," with an essay on ornamental design. Under the title of "Chorea Sancti Viti, or Steps in the Life of Prince Legion," he published in 1851 a series of allegorical etchings. He was next employed on his most important painting, eight large pictures illustrating the history of the English Border, at Wallington Hall, the seat of the late Sir Walter Trevelyan, and in 1863-4 the complement of this work was executed in the form of eighteen oil paintings on canvas for the spandrels of the arches in the saloon, containing the Border subjects. In 1868 he completed in encaustic a series of mural paintings illustrating the King's Quair on the staircase of Penkill Castle, in Ayrshire; and in 1869 came out "Albert Dürer: His Life and Works," a biography containing etchings by the author. Other works from his pen are "Selections from the Works of David Scott, R.S.A., with a Memoir of his Life, etched and written by his Brother," "Half-hour Lectures on the History and Practice of the Fine and Ornamental Arts," "William Blake: Etchings from his Work, with Descriptive Text," and "The Little Masters of Germany." In 1882 he was the architect for a hall added to Penkill Castle. For over forty years he exercised, says the *Scotsman*, a wholesome influence on young men in the world of art and letters, notably on the Pre-Raphaelite Brotherhood.

The Colonial authorities of Lagos, with the aim of developing a trade in Yoruba timber, have issued a circular to the colonies, stating that the Government will readily receive specimen logs of native trees, and will send them to England to be reported on and valued by experts. It is stated that throughout the colony there exist a large number and variety of timber trees, and that that part of West Africa (in common with the Gambia and the Gold Coast) is rich in cabinet woods of good quality and appearance. Communications on the subject should be addressed to the Colonial Secretary, Lagos.

Mr. A. Lafone, M.P., will lay to-morrow (Saturday) the foundation-stone of the Bermondsey Free Library, which is to cost £8,000.

MEETINGS FOR THE ENSUING WEEK.

MONDAY.—Royal Institution. General Monthly Meeting. 5 p.m.
Royal Institute of British Architects. "Sassanian Architecture," by R. Phené Spiers, F.S.A. 8 p.m.
Society of Arts. "Gaseous Illuminants," Cantor Lecture No. 2, by Professor Vivian B. Lewes. 8 p.m.
Liverpool Architectural Society. "House Drainage," by T. Harnett Harrisson. 7 p.m.
Leeds and Yorkshire Architectural Society. "Descriptive Notes on Normandy," by F. Clibborn, of Birkenhead. 8 p.m.

TUESDAY.—Institution of Civil Engineers. Discussion on "The Vibratory Movements of Locomotives." 8 p.m.
Manchester Architectural Association. "Terracotta," by G. H. Willoughby.
Glasgow Architectural Association. "Ornament," by W. J. Millwain. 8 p.m.

WEDNESDAY.—Society of Arts. "The Chicago Exhibition of 1893," by Jas. Dredge. 8 p.m.
British Archæological Association. "The Epinal Glossary," by W. de Gray Birch, F.S.A.; and "A Brass Recently Discovered at Gloucester," by Cecil Davis. 8 p.m.

A memorial window, executed by Messrs. Kayll and Co., Album-street, Leeds, has been placed in St. Jude's Church, Ramsey, Isle of Man. The subject is the Good Deeds of Dorcas.

At a special meeting of Coatbridge town council, held on Monday, the offers for the mason and brickwork of the new municipal buildings were considered, when those of Messrs. John Devlin and Son, builders, Glasgow, were accepted, the mason work amounting to £7,809 2s. 10d., and the brickwork to £1,702 18s. 4d., the building stone to be taken from Gatelawbridge Quarry, Dumfriesshire.

A new Cambridge quarter clock was set going the other day at St. Mary's parish church, Stamford, by the Marquis of Exeter, the opening service being conducted by the Lord Bishop of Lincoln, the Rev. C. H. St. John Mildmay, rector, and a large number of the neighbouring clergy and laity. The clock shows the time on two large external dials, and was made and fixed by Messrs. Wm. Potts and Sons, clock manufacturers, Guildford-street, Leeds, from the designs and plans of Lord Grimthorpe.

Trade News.

WAGES MOVEMENTS.

WARRINGTON.—The master builders of this town have received six months' notice from the operative bricklayers for an advance of ½d. per hour on the present rate of wages, also a reduction in the working hours during the winter months.

CHIPS.

The Southampton Corporation are supporting a scheme by which Parliamentary powers will be sought for the inclosure of the Mudbanks by an embankment, so as to provide a tidal basin and low-water channel near the pier.

On Monday the memorial-stones of additions to Salem English Baptist Chapel, Plasmarl, Landore, Swansea, were laid. The total cost of the extension is estimated at £455. Mr. S. Wilson Edwards, Swansea, is the architect, and Mr. Elias Morgan, Landore, the contractor. The chapel, which is principally in the Gothic style, will have an additional frontage of 8ft., and new galleries and seats, giving an increased sitting accommodation for 260 persons.

It has been decided to enlarge the hospital at West Bromwich, at a cost of about £6,000, by the addition of two circular wards to contain twelve beds each, and new laundry and sleeping apartments for the nurses.

New clothiers' premises in St. Mary-street, Cardiff, have just been built from plans by Mr. S. Rooney, of that town. The premises cover an area of 14,000sq.ft. Mr. Thomas Gough was the contractor.

A large illuminated turret clock has been erected at the entrance of Queen's Arcade, Briggate, Leeds, by Messrs. Potts and Sons, clock manufacturers, of the above town. There are two 5ft. dials fixed in an iron drum, and supported by an artistic iron bracket; on the top are the words "Queen's Arcade," which are illuminated at night, and above that a crown. The works are placed inside the arcade, and connected to the dial by a long rod. Lord Grimthorpe's escapement and other improvements are inserted.

A marble bust of William Symington, the designer and builder of the first successful steamboat, executed by Mr. D. W. Stevenson, R.S.A., was on Monday formally presented to the Edinburgh Museum of Science and Art.

Some additions have just been made to Cadeleigh Church, a 15th century edifice, some six miles from Tiverton. The new work consists of chancel fittings in carved oak, and includes a pulpit, hexagonal in plan, and containing in its central niche a statuette of St. Bartholomew, a priest's prayer-desk and seat, a lectern having an angel with outspread wings to carry the desk upon which the Bible rests, and an altar and super-altar. These additions have been carried out by Mr. Harry Hems, of Exeter, and were first used on Sunday week.

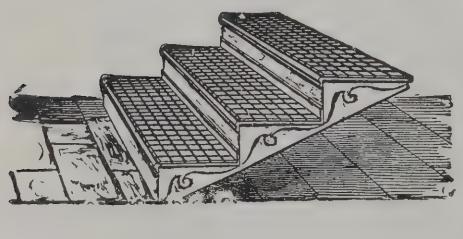
A new Post-office, erected by the Government in Queen Anne-street, Dunfermline, was formally opened on Monday. It has been built from plans by Mr. W. Wybrow Robertson, of H.M. Office of Works, Edinburgh.

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Bletchley
Bolton
Bolts Bridge
Bombay, India
Bow
Bowdon Central
Brick Lane
Bristol
Broadfield
Broad Street
Broadstone, Dublin
Burdett Road
Burscough Junction
Burton
Bury
Borough Road
Mersey Tunnel
Canonbury
Camden Road
Chalk Farm
Charing Cross
Cheddington
Cheetham Hill Junction
Chequerbent
Clayton
Clifton
Clitheroe
Crewe
Crooked Billet Level Crossing
Cross Lane
Crumpsall
Cullercoates
Cannon Street
Dalston
Daubhill
Daybrook
Denholme
Derby
Droylesden
Drighlington
Dudley
Dudley Port
Dundee
Ealing Common
Ealing Terminus
Earl's Court
Edgware Road
Failsworth
Farringdon Street
Farrington
Fenchurch Street
Finchley Road
Firsby
Forest Gate
Forest Road Level Crossing
Fulham
Geedley
Gloucester Road
Gower Street
Grantham
Greenwich
Hackney
Haggerston
Hammersmith
Heaton Park
Hereford, Barr's Court
Highbury
Highdran Road, Wallsend
Hollinwood
Holyhead
Homerton
Horley
Hounslow
Hounslow Barracks
Keighley
Kemble Junction
Kenilworth
Kensal Green
Kentish Town
Kilburn
Kilsby
King's Cross
King William Street
Langley Green
Latimer Road
Lea Bridge
Leamington
Leman Street
Leyland
Leyton
Leytonstone
Lichfield
Limehouse
Lincoln
Little Ealing
Liverpool Road, Manchester
Liverpool Street
Llandudno
Long Buckby
Loudoun Road
Ludgate Hill
Mark Lane
Maidstone
Manchester
Manchester, Exchange
Manchester Road
Mansion House
Mildmay Park
Millhill
Milverton
Monkwearmouth
Moorgate Street
Monument
Newcastle-under-Lyme
New Cross
Newport
Newton Heath
North Brentford
North Bridge
Northampton (Castle Station)
Nottingham
Oldbury
Old Ford
Oldham (Mumps)
Paddington
Parsons Green
Patricroft
Penzance
Pickle Bridge
Plaistow
Pleck
Plymouth
Poplar
Portsmouth
Prestwich
Radcliffe Roade
Salisbury Road
Seething Lane
Shadwell
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Werneth, Oldham
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West End Lane
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Widnes
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Wood Green
Wormwood Scrubbs
Worsley
Wolverhampton
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Winchester
Woolwich
Wrexham

Schools, &c.
Belfast Methodist College
Battersea, St. Mary's Church
Birmingham, Cowper Street
Clapham
Colchester
Forest Gate
Hanway Place
Harrow
Haverstock Hill Orphan Working School
Jamaica Level
Leyton, Grammar School
Leyton, Church Road
Newhaven
North Bow
Old Ford
Poplar, Byron & Bright Streets
Southsea, Church Path
Southsea, Omega Street
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Sutton
St. Jude's
Tayport
Torrington
Upton Cross
Wandsworth

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Greenwich Infirmary
Guy's Hospital
Lincolnshire County Asylum
Middlesex County Lunatic Asylum
Netley Hospital
Peterborough Infirmary
Rubery Asylum, Northfield
St. Thomas's Hospital

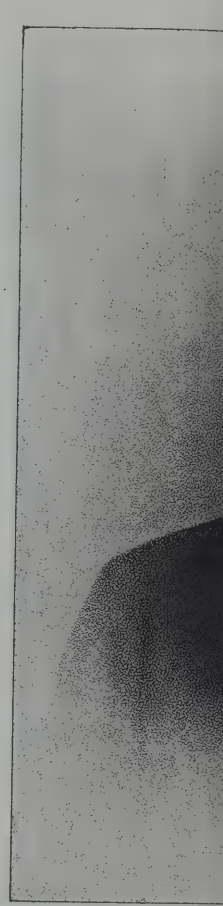
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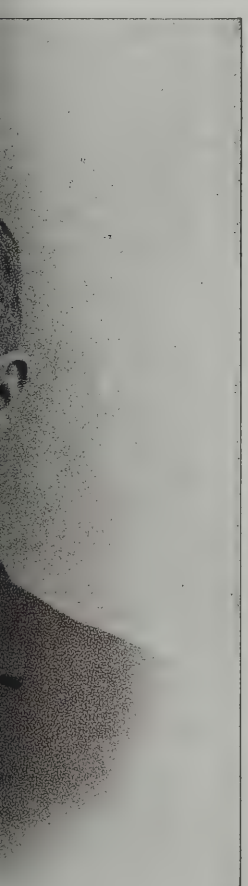
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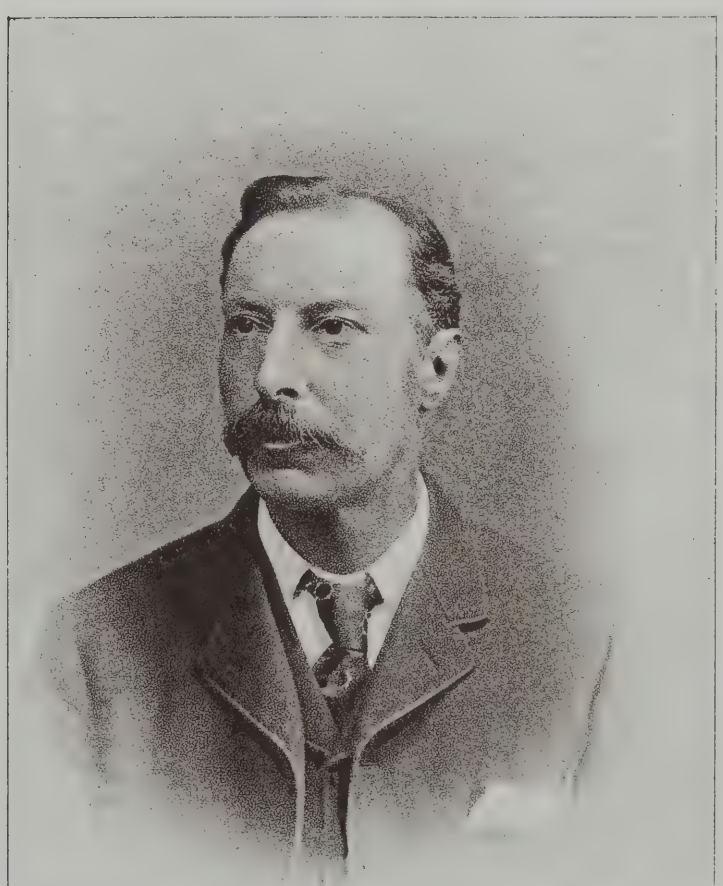
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IE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LIX.—No. 1874.
FRIDAY, DECEMBER 5, 1890.

ARCHITECTS' SUPERVISION.

HE obligations of an architect to carry out his own design and specification e been brought to the notice of the pro- ion by the discussion of questions at the don School Board having reference to disclosures made in the recent action nst a well-known firm of contractors. want of efficient superintendence has n the chief weakness of a department usted with the carrying out of very im- ant public buildings, and the fact has rally suggested to several members of Board the question whether outside pro- ional assistance should not be sought in design and construction of new schools. discussion on this question, and the posal made by one member that the rks Committee be instructed to have six schools planned and built under the erintendence of three outside architects, subjects reported in our last number, which we draw attention. The main stion turns upon superintendence. How n an architect should visit his work, what should be the general superin- lence which he is supposed to give, are stions that can only be decided by him- , assuming, of course, that he is willing ake into consideration the class of work the amount of personal attention that it ht to receive. Unfortunately, we do not this conscientiously self-imposed duty le a general rule among the profession. igation is set aside for convenience. The nber of engagements is considered to be a d excuse for reducing the amount of sonal supervision, as if the practitioner's ponsibilities to his client were to be gauged the extent of his business. Upon this nciple an architect having a large practice ght think it his duty to decline to give supervision, or to pay few visits at long ervals. There is a well-known story rent concerning an eminent church archi- t, now deceased, who, when travelling o the country to inspect a building in pro- ss, suddenly looked out of the window of railway carriage, and in accents of horror claimed: "Who has been allowed to aper with that grand old Abbey Church? is being positively ruined!" "Oh, that's of Sir ———'s restorations," was the iet reply of a gentleman sitting opposite, oting the Christian name of the titled in- rogator. Men of eminence in the pro- sion can make their own terms, and if public are willing to load them with nmissions, they cannot wonder if they eive very little personal attention after design has been accepted. The old ime, with its many advantages, has ssed away—men now practise architecture a business as well as an art, the days of ister masons and surveyors engaged on e work as superintendents have gone, and ployers engage architects, as they do ctors and lawyers, by paying them fees to pply designs and superintend the con- uction of buildings.

No custom or practice by law has been d down as obligatory with respect to architect's superintendence. There is thing to compel him to devote a certain nount of time to supervision; the only ing required of him is to see that the ns and specifications have been carried t fairly, and in a workmanlike manner. A tailed superintendence he is not compelled give, as, for instance, in seeing that the ain pipes have been properly laid and jointed, or that every brick and stone is of good quality and properly laid. Such details as these he could not attend to, nor is it desirable that he should when a clerk of works specially trained in these matters is employed. But though there is no legal definition as to what superintendence ought to be, or how far it ought to go, there is yet an unwritten law—the obligation of an architect to see that his design is carried into effect in a workmanlike and proper manner. We assume that every architect desires to rest his claims and merits, not on paper designs, but on actual buildings; that, for his own reputation, he is anxious to carry out his intentions in the best manner possible. If he does so, he is called upon to devote a considerable time to the superintendence of works, and that in proportion to the extent of artistic detail involved. Therefore, while there is nothing compulsory laid down requiring an architect to devote so much time every day or week to this part of his duties, we can hardly conceive it possible that he should take advantage of a circumstance that would jeopardise his reputation. But we have not far to go to find men engaged in official positions as architects to School Boards admitting that they never visited buildings until they were completed, and then not to examine the work. Our report of "The London School Board v. Wall Brothers" illustrates in a remarkable manner the very unsatisfactory kind of superintendence supplied in the carrying out of important public contracts, fully justifying the comments made by the judge and jury. When public buildings erected by important local authorities are thus controlled, it cannot be surprising if we hear of the want of proper supervision over works of lesser importance.

To some extent the question of the amount of supervision an architect should give to his work is affected by the employment of clerks of works. In every large building the clerk of works is absolutely necessary; he is supposed to give constant personal attention to the work, receiving his instructions from the architect, and the greater the work the more necessary it is to exercise sufficient control over the building, and to relieve the architect from the more arduous and mechanical duties of the superintendence. The architect, indeed, remits to the latter that part of the supervision which he cannot faithfully undertake himself. In so doing, however, he does not necessarily lighten his own responsibility. A clerk of works represents the architect—he takes his instructions from him; but he does not thereby take upon himself the responsibility of his chief. The general supervision still rests with the architect; the clerk of works is his factotum; but he does not relieve the former of any liability that belongs to the architect—a point that cannot be made too clear, and is very forcibly illustrated in the recent inquiries by the London School Board. The departmental clerk of works appears to have more responsibility thrown upon him than a clerk engaged under an independent architect. He is often called upon to superintend more than one building at a time; he is regarded as a sort of deputy architect, and certainly less control is exercised over him by the Board. We cannot wonder that the defects of the Board schools in London have been partly owing to divided authority, and to the clerk of works having several buildings to look after during the day. How can contract work, undertaken at a low price, be possibly carried out under these conditions? To place more than one building at a time under one clerk is to entirely take away the direct object of a resident superintendent, who is supposed to be on constant duty. Personal hourly superintendence is necessary in all the operations connected with building, more especially the laying of concrete foundations, drainage, the insertion of damp-courses, and the building of walls. Every description of ironwork and special construction requires constant overlooking. How many stones are likely to be laid on the wrong bed during a few hours' absence of the clerk of works? How many feet run of pipes and joints may be covered in during the time? With what carelessness damp-proof courses can be laid, or cutting and pinning the ends of iron joists, landings, and stone steps! Superintendence is more to the architect than the mechanical compliance with plans or specifications, for it means the actual realisation of the design. The painter and the sculptor execute their own designs; but the architect is compelled to leave to others the execution.

Our American brethren have wisely been considering and framing a code of rules on the subject. Employers in the States, as in this country, think that the rates they pay their architect ought to be sufficient to include his constant attention or that of a deputy or clerk—an idea held by many lawyers. The principles propounded at the Convention of the American Institute are—(1) that an architect offers, and is paid for, only a certain limited kind of superintendence; (2) that it is to the interest of the employer to pay for constant detailed superintendence; (3) that the architect is in no sense a contractor, nor is he responsible for the contractor's misdoings, and that the commissions usually paid are utterly insufficient for any such services or responsibilities, even if they were desirable. It is, therefore, urged that the employment of clerks of works should be assisted by the announcement of regular rates as an extra to the schedule. As regards the architect's supervision, is is affirmed that he will furnish "general superintendence by himself or deputy of such frequency or duration as in his judgment will suffice, to fully instruct the contractors, judge the merits of materials and workmanship, and maintain an effective working organisation of the several contractors, and to enable him to decide when the successive instalments are due. He is to determine in any constructive emergencies, and order necessary changes and define the true intent and meaning of the specification." He will also have power to demand the correction of all mistakes, but his superintendence is not to include liability or responsibility for any breach of contract by the contractor. The architect is to have the appointment of a clerk of works when necessary, to be paid on a schedule to be agreed. These amended clauses appear to go some way towards distinguishing the periodical supervision of the architect, and the constant superintendence of the clerk of works; but the clause as it reads is not so clear in asserting how far the clerk of works' authority is to extend. It would be more definitive to assert that the architect's supervision should be mainly interpretive of the drawings and specifications, that it should be chiefly exercised in reference to construction and materials, leaving the clerk of works the duty of carrying out these instructions in the building. All breaches of contract by the contractor, and all accidents and defects due to defective workmanship and materials, ought necessarily to fall upon him, and not upon the architect; but when due to imperfect design, or to errors of specification, the architect is certainly liable. A certain discretionary power would be given to the clerk of works in matters of detail. We can imagine in carrying out a building some question to arise as to whether some other course than that specified or agreed upon by the architect would be desirable. The clerk of works in possession of all the facts and circumstances is the right person to decide in the absence of the architect. He may suggest a trifling departure from the design or specification which would be an advantage to the building, and to this extent he ought to be allowed to go and exercise his discretion.

The fact is, architects leave too much in the hands of their superintendents, and if anything goes wrong they blame them. They give them *carte blanche* to alter the design or prepare any details that may be required, and, in fact, place the entire superintendence in their hands. We cannot wonder if the building is not so satisfactory as it might be, if responsibility is sometimes unjustly cast upon an individual who ought properly not to be subject to any, except that arising from sheer neglect of duty, in looking over the work.

ROYAL SOCIETY OF PAINTERS IN WATER-COLOURS.

THE present Winter Exhibition at Pall Mall is somewhat disappointing compared with previous collections of finished work, though the fact that the display now on view is mainly one of sketches and studies will be sufficient to atone for the apparent want of importance or strength of the exhibits. The variety of the methods and technical modes of handling is at least of interest to the critical connoisseur. Take, for example, the sketches and studies of Sir John Gilbert, Birket Foster, and G. A. Fripp, and compare them with those of R. Thorne Waite, Wilmot Pilsbury, and Paul J. Naftel—painters who represent very opposite modes of artistic expression. Mr. G. A. Fripp's "View from the Bridge at Llanyltyd, North Wales" (2), "Near Horsham, Sussex" (27), "Study of Kisden Force, Upper Swaledale" (156), have all the delicacy of colour and minuteness of touch that characterise the earlier aquarellistes. Simple colour washes derive their form by delicate line work with the brush, putting us in mind of the early work of Prout and Gandy. The last-named subject is a careful study of stratification, showing the lines of cleavage of rock, the tone warm and subdued; the valley, too, of the Mawddach (2) between hills is full of sunlight and tone. Sir John Gilbert, the President, sends three studies: No. 30 is a "Study for a Larger Work," representing warriors in armour on horseback—a night effect, the colouring bold and the touch vigorous and free; "The Death of Adonis" (160) is more delicate in handling. The work of the veteran water-colourist, Birket Foster, is still remarkable for patient delineation and touch: No. 6, "On the Rocks"; "A Crofter's Cottage" (74); his sketches at Arisaig (82—95, 178), and his other Highland studies are marvellous for their truthful drawing and colour. By a different method, less laboured and depending more on a subtle sense of colour and manipulative skill, Paul J. Naftel's work claims notice—his "Langdale Pikes" (3), "Dungeon Ghyl, Westmoreland" (16), are delightfully delicate in tone; notice the hillside with its foliage in the last, and the sunlight effect in trees in "Mid-day Rest" (65). The painter's most finished work is "Stones on the Lyn, N. Devon" (108), a purling stream through rocks and foliage, solidly handled in forcible colour, the stones drawn with much power. The evening effect (180) is a charming effect of a rough shore. Francis Powell, P.R.S.W.S., in his "Shore Waves" (5), and other coast sketches, shows also a dexterous touch and pure, healthful colour. W. Eyre Walker sends several landscapes. His "Old Farmstead" (109) is delicate in tone, and there is a true feeling in most of his work. Vigorous and strong in colour is Robert W. Allan's "Kirchweihe" (19). The perspective and drawing of the market-place and the group of market folk are skilful. "A Scotch Washing" (33), "Campbelltown Harbour" (149), and the smaller sketches on the screen are highly characteristic of Mr. Allan's bold decisive touch and brilliancy of execution, though lacking somewhat in atmosphere. Ambitious is the landscape of Tom Lloyd, "The First Breath of Autumn," a garden overlooking a lake, and a young lady with her dog, pensively musing at the gate in the wall of her demesne—a charmful scene of tranquil nature, luxuriant in the bright reds and browns of autumnal foliage, with gossamer-like thistledown wafting in the breeze. The idea is sentimental, the tangle of flags and grasses admirable in rendering. Mrs. Allingham's pretty studies of rural beauties are fascinating in the true tenderness and feeling with which she depicts every leaf and flower. A "Spring Copse" (14), a bank of primroses and other wild flowers; and the sketches of cottages at Freshwater, Isle of Wight (168, 171), are delightful in their minute and conscientious rendering of cottage life.

Impressionism finds few exponents. A. Melville (23) has a note of colour, a "Gleam of Sunlight," and other clever impressions of the same effect, including a sketch of the "Mosque of Cordova" (297) on the screen, and the "Canon of Ronda" (67). Strong and healthful in colour are R. Thorne Waite's landscape sketches. "The Road to Maldon" (25), "Danbury Common" (94), "A Roadside Cottage" (120), and other studies are works that indicate a vigorous touch and a true sense of tone and colour. Edward A. Goodall's "The Gate of Justice, Alhambra" (26), and his drawings of "Trajan's Aqueduct, Segovia," and other foreign studies have an archæological interest apart from their merits as drawings. Pleasant as bright sketches are the landscapes of John Parker "Sleepy Streatley" (59), bathed in sunlight and haze. "Almshouse, Kent" (78), "On the Thames" (170), are among those; also a pretty study of a girl arranging poppies (98). Also in a vein of true poetry we must place the work of Wilmot Pilsbury, whose "Wheatfield" (44) and "Village Homes" (58) are delicately soft in tone, but somewhat mannered in technique. The flowering creepers, the nasturtiums growing against the cottages, the apple blossom in 143, the golden corn in 166, the ricks and poppies (177), and other studies from field, wayside, and hedgerow, indicate true feeling and tenderness. Another artist, Herbert M. Marshall, well known on these walls, contributes some pleasing sketches on the banks of the Thames. "Old Chelsea" (36), "Millbank, Westminster" (68), "Sketches at Whitby" (62, 364) "Staithes" (117), are some of these, all exhibiting sharpness of handling, pleasing grouping and colour. A large and luminous subject, "Lost" (46), by Chas. Robertson, an Indian courtyard, with costly plunder strewed over the ground, is cleverly painted—the groups of soldiers and articles of value especially. Other Eastern studies and views of Devonshire are sent, all bearing evidence of Mr. Robertson's versatility.

"On the Banks of the Mawddach" (40), by Arthur Hopkins, is subtle in its rendering of foreground and wild flowers, the handling delicate; "Haymaking" (56) and some other sketches are also clever. Matthew Hale has a nice sketch of blue sea and cliff (43); Cuthbert Rigby (45) contributes some nice landscape effects, and there are a good few works by G. H. Andrews (47, 87). The contributions of William Callow are not quite so numerous or equal in quality to former displays. No. 17, a Gravesend view, "St. Helier's" (84), "A Bit of Wimbledon" (121), "Caister Castle, Norfolk" (191), "Dartmouth Castle" (238), are nevertheless characteristic drawings, full of power and tone. Colin B. Phillip's study of "Rock in Argyleshire" (91) is more forcible than pleasing as a subject. We must notice briefly John Burr's "Village Beau" (77), Norman Tayler's "On the Way to the Monastery" (89), Miss Clara Montalba's delightful Venetian sketches (111, 144), and many on the screen, luminous and pearly in hue; Samuel J. Hodson's views in Verona (128, 139 especially the "Corso," full of careful draw ing, light, and shade; E. F. Brewtnall' pastel study, "Dora" (129); Walter Field' small sketches of Windsor and Eton (153) Alfred W. Hunt's "Warkworth" (161), clever study of atmospheric effect, sea, an mist; A. W. Hunt's charming sketch "Robin Hood's Bay" (164); Henry Moore "Thunderstorm," a dexterous study cloud, (174); Sir Oswald W. Brierly's ver charming studies of "Venetian Craft" (179 and other sketches of fishing boats (333, 34 and studies from nature (257). Cuthbe Rigby's "Summer Days" is a little flat i effect; Albert Goodwin's powerful "Afterglo on the Mediterranean" (185), "Maidstone (20), and the night scene, "Ponte Vecchi Florence" (243), are poetic in conceptio strong yet subtle. We must note the figu studies of H. Gillard Glindoni as bein especially characteristic and spirited- "Cherry Ripe" (232), "Vive la République (253), "Vive le Roi" (278), "Expectations, an old beau with nosegay (283), are ver clever studies. Walter Crane's ideal figu studies of the seasons are graceful, but h other figures lack atmosphere. The studi by George Clausen (110, 222), and som interesting drawings by the late Arthu Glennie, and the large monochrome stud "Wreck of the Halswell" (241), by G. H Andrews, cannot be passed over.

THE PROPOSED CHANGES AT TH ARCHITECTURAL ASSOCIATION.

WE are glad to see that the Speci Committee for the Revision of th Rules of the Architectural Association, in report to be presented at the business mee ing to be held on Friday in next week, th 12th inst., have adopted a suggestion w have repeatedly made, that if any increas in the subscriptions is considered necessar it should apply *to future* members only. Th funds of the Association will doubly benefi for while candidates for membership wi pay, as a matter of course, the sum demande for admission and as a subscription, th senior members who have retained the names on the roll for old acquaintance' sak although rarely attending the meetings, wi not be reminded by an increase in the sul scription that the present is a favourab opportunity for closing their connection wit the Association. The proposals of the Speci Committee are that the entrance fee should raised from one guinea, as at present, to tw guineas, and that the annual subscripti for all members elected after the 1st January next shall be one guinea instead half-a-guinea, as now payable.

A feature of the revision is that the rul are now split up into a constitution an by-laws, and the arrangement is on t whole clear and satisfactory, although nee ing a little trimming and verbal alterati here and there. The proposed substitution By-law 36 of voting by show of hands inste of papers sent by post, recently propose is open to criticism, favouring, as it do metropolitan members at the expense provincial men in any future changes in t rules, and we trust the point will be de with at the meeting of Friday in ne week. In the constitution, consisti of eleven of the most important claus the chief changes are that the declar tion asserting it to be one of the ai of the Association "to advance the pr fession" is omitted. Branch bodies henceforth to be known as "allied" in l of "affiliated" societies, and are defined holding their meetings not less than thi miles from Charing Cross. A definition qualification for membership is now given

The principal change in the by-laws, so 39 in number, is, besides the proposed incre in the entrance fees and in the subscripti

new members, the addition of a "studio" the methods by which the objects of the sociation are to be carried out. Rule 29 ovides that "the committee shall have wer to appoint . . . any paid officials to ist in the work of the Association at such nuneration as may be deemed expedient," parently an intimation that it is proposed at the arduous work now so efficiently rformed by the two honorary secretaries at cost to themselves, it has been said, of at ast £50 a year each, shall in future be compensed.

HE HYDROPATHIC ESTABLISHMENT AND ITS BATHS.—XII.

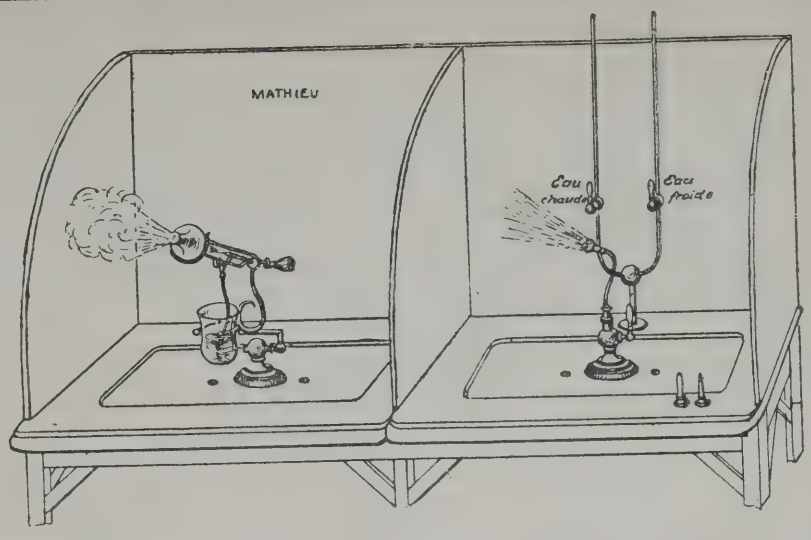
By R. Owen Allsop, Architect.
uthor of "The Turkish Bath: its Design and Construction.")

THE treatment of local diseases by means of the application of pulverised water certain parts of the body is carried on in pulverisation rooms." These features of ie well-appointed medical bath-house will robably be increasingly required in the ear future, and therefore merit their share attention. The curative attributes of ulverisations of the kind to be considered re referable to the same sources as those of ny true hydropathic remedy, so long, at ast, as the water employed is in a state of atural purity. The temperature and dura-ion of the application chiefly govern the ffects produced. When, however, spring vaters, naturally medicated with sulphur, ron, or salt, &c., are employed the curative nd remedial virtues of these chemical sub-tances must be added to the benefit derived rom water simply. The application of pure vater in a pulverised form is in harmony vith every principle of the strict hydro-athist, and consequently deserves his atten-ion. Where thermal or cold spring waters re the media employed, the treatment may e said to be more suited to the medical ath-house.

THE MONT DORE CURE.

The Mont Dore Cure, as carried on at the famous establishment in the Auvergne, Puy le Dome, consists properly of a treatment embracing not merely pulverisation, but every kind of application of the Mont Dore waters that can be devised. The term has, nevertheless, in this country become iden-tified chiefly with pulverisations. In its full and complete form, the cure embraces drinking of the water, inhaling it in vaporised and pulverised conditions, nasal irrigations, ear and eye douches, and baths of various kinds and at various temperatures. The greater part of these require no special explanation; but the method of pulverising the water, and its mode of application may not be so self-evident to the reader.

The details of the administration of pul-verised water, on the Mont Dore system, may vary according to individual fancy; but the main principles are similar. As a general rule, the pulverisation of the water —the act of splitting it up into infini-tesimally small portions—the formation, in homely words, of very delicate *spray*—is accomplished by means of a fine jet of steam impinging upon an equally fine jet of water. The apparatus for producing this spray is placed upon tables, before which the patient sits, and directs the spray against the throat or other part to be treated. In a good bath-house the pulverisation-rooms should be fitted with specially-arranged benches or tables for this purpose. If refer-ence be made to the last article of this series published in the Building News, p. 423, September 26th last, a plan will be found of a pulverisation room for a medical bath-house of some pretension. It is arranged adjoining the lavatory of the inhalation hall. In the centre of the room is provision for six patients, and four more are accommodated at



one side. The section, it will be noticed, cuts through the central table, showing its general form, with the quadrant-shaped vertical divisions between the compartments. Each patient has one of these compartments to himself, and it should be seen that the space allotted allows a sense of comfort. The table, stands, and divisions shown may be formed of marble slabs. A sinking, or "dishing," should be provided at the top of the table or horizontal slab in each compartment, to receive any water or moisture, which should be drawn away in a proper manner. In each compartment a pulverising machine is placed, unless the small douching apparatus is also to be provided, when there will be an assortment of the two kinds.

Pulverising instruments may be made to individual fancy; but the greatest care should be observed in selecting only those of first-class make, and so insure against any defect that may lead to the danger of scalding. Some excellent appliances of this nature at the baths at the Hôtel Mont Dore, at Bourne-mouth, were made by Mathieu, of Paris; and illustrations of these are given herewith. The drawing shows a stand supporting a double compartment; in one is placed a pulveriser, and in the other a delicate douch-ing apparatus for the ear, eye, and nose. The horizontal slabs or tables are sunk or "dished," as explained. In the left-hand compartment is the "pulveriser," consisting of a pedestal or stand, forming a steam tube, and holding a glass to receive the Mont Dore water. The steam-pipe terminates in a fine nozzle, and a similar nozzle, commu-nicating by means of an indiarubber tube with the water, is placed at an acute angle with it. Two slight metal arms support a thin porcelain funnel, which collects the spray into a stream. The upper portion of the appliance works on a joint, and thus, by means of the handle on the right, the stream can be conveniently directed as may be necessary. The action is as follows:—When steam is turned on, it rushes out of the fine nozzle, and draws water up the lower nozzle, the water being pulverised or converted into spray, in the process. This is concentrated into one stream by the funnel, and the patient, with his right hand on the handle, directs it against the throat or other part. In the former case, he keeps his mouth widely open, to admit the spray, and in cases of throat and chest affections actually in-hales.

The principle of the pulveriser is precisely that of the common "spray-producer" for scent-bottles. In the latter case, however, a rush of air causes the liquid to ascend its tube; in the pulveriser the jet of steam is the agent. The treatment requiring to be given with heat, this is effected by means of the steam.

There is some slight danger of scalding under the system of treatment. Should the jet of steam be suddenly raised to a higher temperature, or the flow of water suddenly checked, the result will be an increase of heat. To guard against this, it is important to employ a low-pressure, and consequently a low temperature of steam. It is further necessary that the apparatus be kept in per-fect condition by continual examination, and, above all, that it be scrupulously clean. The water should be free from foreign particles of matter, and the tube should not reach to the bottom of the glass. Of great moment is the nature of the steam supply. It would be perfectly easy to connect a series of these pulverising appliances to the main steam-pipe of an ordinary boiler, but nothing would be more unsuitable. If any such general system of steam supply were adopted, the boiler would have to be of special construc-tion, and specially reserved for its purpose, the boiler being weighted to the lowest pressure. A convenient, safe, and ordi-narily-adopted plan is to employ a small gas or spirit-heated boiler to each apparatus, or to have two or three such boilers in the pulverisation-room, each one being movable and easily detachable from the pipe leading to the apparatus, so that it can be used with such a one as may be desired. These small boilers can be placed under the tables, if more complete arrangements have not been made for their reception. Cylindrical copper boilers with domed-tops, safety-valve, gauge, steam, and water-cocks, heated by gas-flames will serve all purposes. If fitted with side handles and easily-detachable unions, they can be moved about as required.

With proper precautions a treatment that is undoubtedly efficacious in many throat and chest diseases will not be open to the charge of danger from scalding.

The apparatus, shown in the right-hand compartment of the accompanying illus-tration, is a miniature douche for the eye, ear, and nose, as used in the Mont Dore cure. It consists of a stand or pedestal, much after the kind of that of the pulveriser, but terminating with a curved pipe, the end of which is prepared to receive a minute rose or douches of various degrees of fineness. It is fitted with a stop-cock. Behind, are seen the small supply-pipes of hot and cold water with regulators. The pipes unite in a ball to allow of proper mixing of the hot and cold supplies, so that the mixed water may issue at an even temperature. The patient sits before the apparatus and directs the spray or douche against the eye, ear, or nose as may be required. On the front of the table, or tray, are seen two extra nozzles for forming douches of different strengths, the rose being in position on the pedestal. This is a true *local hydropathic bath*, though, when used with the Mont Dore water, possessing some special therapeutic qualities.

(*To be continued.*)

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

An ordinary meeting of the Institute was held on Monday evening, the President, Mr. Alfred Waterhouse, R.A., in the chair. The President announced that the council would proceed on the 2nd February to nominate to Her Majesty a person as a fitting recipient of the Royal Gold Medal. Any nominations by members must be sent in to the council before January 1st. Mr. Waterhouse added that he wished to make a personal explanation as to a portion of his opening address which referred to the relations between the Institute and the Architectural Association. He had been informed that an unfavourable impression had been left in the minds of some who were interested in both the senior and junior bodies. He had called attention to the fact that from some cause the Association had not furnished so large a proportion of candidates for examination as might have been expected, and in this he was supported by the President, Mr. Leonard Stokes, who, in his inaugural addresses both last year and this, expressed fears that the Association classes did not prepare men fully for the examinations. So far from wishing to give offence, he had for some years been a member of the Association, and although he had not had the privilege of attending its classes, he was interested in its welfare and success. He wished the Association to seriously consider its position with regard to the Institute.

Mr. C. H. Brodie rose to continue the discussion, but was ruled out of order.

SASSANIAN ARCHITECTURE.

A paper on this subject, illustrated by numerous drawings and photographs, was read by Mr. R. Phene Spiers, F.S.A. Although the Sassanian dynasty endured but little more than 400 years, from A.D. 226 to 636, the architects and artists of the period had developed a characteristically marked style from a constructional point of view. But the style had other claims to consideration, as it seemed to form a connecting link between Assyrian and Babylonian architecture on the one hand, and Byzantine work on the other—of retrospective value, if the vaults of Al Hadhr, Serbistan, and Firouzabad represented the traditional method of such coverings handed down from Assyrian times, and of prospective value in regard to Byzantine work, provided that the dates given to Serbistan (about A.D. 350) and Firouzabad (about A.D. 450) were correct. The earliest building classed as Sassanian by Fergusson was the Palace of Hatra, now called Al Hadhr, respecting which little was known beyond the information communicated to the Institute in 1846 by Mr. (now Sir) A. H. Layard. Further accounts of the ruins had been given by the late Dr. Ross, the surgeon of the British Residency in Baghdad. Two of the great halls of Al Hadhr measured about 95ft. by 42ft. or 46ft., and the third 60ft. by 65ft., and their vaults, which had fallen in, were said to be semicircular, though the Sassanian vaults were usually elliptical. The doorways were, however, invariably circular-headed. Certain of the voussoirs of the arches were enriched with sculptured heads, and the entrance doorways to a smaller hall had heads with curly bag-wigs, such as were found on Parthian coins, on every voussoir. As regarded the form of the vaults, the elliptical, or three-centred curve, was that used at Serbistan and Firouzabad, and as a matter of fact that form of arch in brick construction was one of the earliest known, for the vaulted granaries behind the Ramesseuses of Thebes in Egypt were of the same elliptical form as those found in Persia. The possibility that the palace owed its erection to Parthian rather than Sassanian architects had been suggested in Professor Rawlinson's "Sixth Great Oriental Monarchy," for when the city was besieged by Trajan in A.D. 116 it contained a Temple of the Sun, which was probably the square building at the back of the palace, containing a frieze, above the doorway, ornamented with the head of the Sun-God, with crescents to represent the moon on either side, and, among other emblems, winged griffins. These last were precisely similar to a griffin found at Warka (the ancient Erech), in the south of Mesopotamia, 250 miles south of Al Hadhr, and described by Loftus, who had given drawings of various objects discovered at Warka, of the same type as that shown in Sir H. Layard's sketches—viz., Syrio-Greek. The second building mentioned by Fergusson was the so-called Palace of Tigranes—now the Great Mosque at Diabekh—which seemed to have been built up of materials taken from some earlier building, while the ornament, which resembled that found by Loftus at Warka, seemed to be Parthian in style. The next example quoted by Fergusson, the Palace of Serbistan, seemed to the lecturer to be the first genuine Sassanian building; and in design and construction it appeared to be the outcome of many experiments made in earlier buildings no longer existing, or not yet discovered. The halls, which were abont 26ft. wide, had been covered with elliptical barrel-vaults. There was also the Palace of Firouzabad (A.D. 450), which had a frontage of about 170ft., and a depth of about 320ft. The entrance consisted of a hall 90ft. in depth, nearly 40ft. wide, covered with an elliptical barrel-vault. Other halls were on either side, and beyond were three halls side by side, each vaulted with a dome on pendentives, which consisted of a series of concentric arches advancing one over the other, and displaying increased scientific knowledge, whereby the Sassanian architect did away with centring altogether, each superimposed ring being carried back on the top of such ring beneath, and resting on it. The Palace of Ctesiphon, on the Tigris, distant about thirty miles from Baghdad (about A.D. 550), which was known to have been built by Chosroes I., formed a rectangular block 312ft. by 170ft., and about 110ft. high. In the centre of the front a magnificent portal, which rose to the full height of the building, gave access to a hall, 163ft. deep by 83ft. wide, covered with an elliptical barrel-vault, 95ft. from the ground to the crown of the vault, and 67ft. from the ground to the springing of the vault. The bricks, or tiles, with which it was built were laid flatwise, as in the granaries at Thebes. The remains of two other palaces have been found in Persia, one at Imumzade, which consisted of a dome on arches, and a second, called the Taj-Eiran, recently discovered by M. Dieulafoy, the hall of which showed a considerable advance in construction, as it was lighted by clerestory windows between the barrel-vaults. The vaults were composed virtually of a series of transverse arches, the interspaces being vaulted across in a most scientific manner. Two other Sassanian buildings, remarkable for their decoration rather than their construction, were the Palace at Mashita and the Hall at Rabboth-Ammon, both at Moab. They were supposed to have been erected under Chosroes II. by Syrio-Greek artists, and they were enriched with ornament derived from Hebrew monuments, interspersed with Persian figures and Sassanian decorative details.

At the close, Mr. William Simpson, R.I., moved a vote of thanks to Mr. Spiers for his exhaustive paper, which was seconded by Mr. Alma-Tadema, R.A., and carried by acclamation.

THE ARCHITECTURAL ASSOCIATION.

The fortnightly meeting of the Association was held on Friday evening, the President, Mr. Leonard Stokes, in the chair. Mr. P. J. Marvin was elected unopposed on the committee, to fill the vacancy caused by the resignation of Mr. Francis Hooper. The following new members were elected:—E. L. Collins, E. L. Harrison, E. Jessop, G. B. Macdona, G. A. Kerr, and A. H. Carter.

ARTS AND ARTISTS IN FORMER TIMES AND TO-DAY.

Mr. William H. White, Sec. R.I.B.A., read a long paper on this subject. Until a comparatively recent periods national or public building contained within itself, the author remarked, as parts of itself, all the great arts, technic, æsthetic, and phonetic, or accessory. These arts were common to the artists of every nation which achieved excellence prior to the invention of printing, and the consequent diffusion of general knowledge between the years 1450 and 1550, wherein the boundary-line between the old and the new methods of artistic practice, according to Fergusson, must be sought. The progress of the arts was traced from the migrations of the Greeks through Eastern Europe, Egypt, Asia Minor, and North-Western India; and then, after a glance at the work of the Romans, Mr. White urged that, under the influence of the monastic system, the sway of Rome over the world had never been entirely lost. A reference to the progress of Europe in the Middle Ages was followed by a sketch of the r and growth of the Renaissance, which moveme he contended, was a development or renovati rather than a revival. In England, three d tinct epochs of intellectual activity in the gr arts could be defined as having occurred in years 1250, 1550, and 1850, there being thu lapse of 300 years between each. The first these movements was a practical, general ma festation of artistic vigour. The second wa studious relaxation of religious discipline, mental demonstration which affected everythi which contributed to the enjoyment of life. T third, in our own time, had been mainly pictor and scenic—an affair of sentiment, fashion, a party spirit, confined to only a portion of t community at large. The lecturer pointed o that it was only during the last century that t word "artist" had been perverted from original meaning of signifying one who exercis a mechanical trade to mean a person of æsthe training and acquirements. Having shown h largely English art had benefited in all perio by the immigration of foreigners, he proceed to consider the art of to-day, ridiculing the pr valent desire to make our edifices picturesq in skyline and on plan, by adding useless towe and irregular masses of building. The arts painting and sculpture, once subsidiary, nc attempted to display their charms independent of architecture. In conclusion, he prophesi that there would be in the future a closer relati between the technic, æsthetic, and phonet artists, and between them and the architect. T technic artists would, he believed, rise in t social scale, and in the next century the ma monopolist would have, he believed, to conte with female competition in all the gentle art Painting, sculpture, or, more properly speakin modelling, and design of every kind wou eventually be practised by women to the ultima exclusion of men, and the designer, pure a simple, "who now calls himself an architect, would be sorely pressed by the softer man in t mutual struggle for existence, and, as a cons quence, the masculine arts of construction wou regain the consideration attached to their practi in Roman and Mediæval times.

A vote of thanks was accorded the lecturer o the motion of Messrs. John Slater and F. Baggallay.

BUILDERS' BENEVOLENT INSTITUTION.

An election of one pensioner on the funds this Institution was held at the office 4, Vernon-place, Bloomsbury-square, on Thur day, the 27th ult., Mr. W. Shepherd, presiden in the chair. There were five candidates for th one vacancy—viz., one man and four wome Shortly after the close of the poll, the scrutinee (Messrs. T. Stirling and T. F. Rider) announce the results of the polling to be as follow, viz.:- Charles Sabey, 97, St. Peter's-street, Islingto aged 71, builder (third application), 1,636 votes Margaret Alice Richardson, 5, Preston, Nort Shields, aged 66, widow of T. B. Richardson builder (fourth application), 1,297 votes; Mar Ann Shapland, 132, Stamford-street, Lambeth aged 71, widow of William Shapland, builde (third application), 1,241 votes; Elizabeth Darby 2, Sangora-road, Clapham Junction, aged 81 widow of Edward Darby, builder (first applica tion), 3,227 votes; Bessy Webb, 314, Old-street E.C., aged 60, widow of Robert Webb, builde (second application), 1,585 votes. The successfu candidate was therefore declared to be Elizabet Darby, whose late husband subscribed to th Institution from the time of its foundation.

SHADOWS.—VII.

We will now follow the system for shadow thrown against the wall-plane by isolate objects more or less distant from the plane. Th student should study carefully the followin examples, as they embody the main elements fo the formation of the shadows thrown by columns their capitals and bases, &c.

In Fig. 24 we have a square block, such a the abacus of a capital in an isolated position a some distance from the plane receiving th shadow. From the points at the angles in th plan we draw the lines at 45° to meet the wall plane, and from the corresponding points in th elevation, the shadow lines A A, B B, C C, D D The intersection of the projection of the line

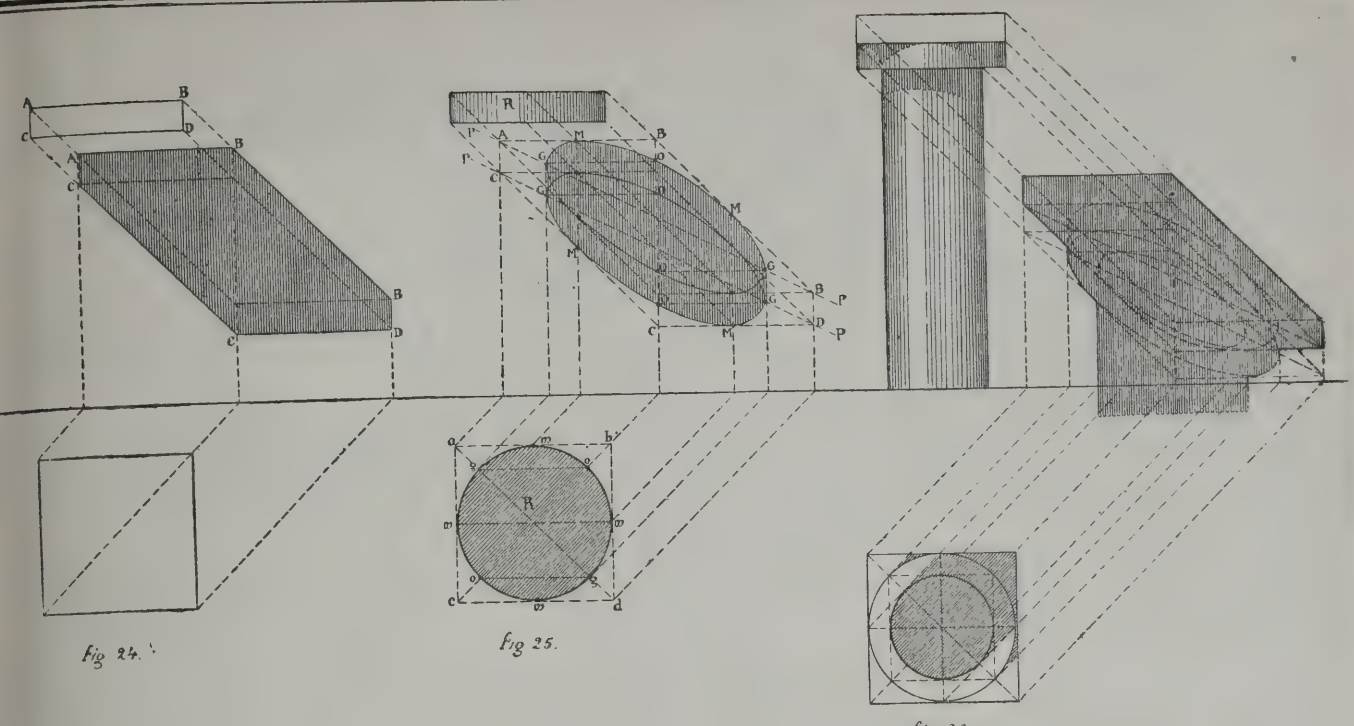


Fig 24.

Fig 25.

Fig 26.

rom the plan with the corresponding lines in he elevation will give us the shadow of the block A B C D.

In Fig. 25 we have the same kind of shadow, except that in this case the block is circular in form. We draw the square *a b c d*, containing the circular block R, then the diagonals *a d*, *c b*, and the diameters *m m m m*. The diagonals will give us the tangent points *g g*, *o o*. From the angle-points *a b c d* we draw the lines at 45° to meet the wall-plane. The intersection of their projection with the shadow lines in the elevation R gives us the traces of the shadow of the containing square *a b c d* at A B C D, as in Fig. 24. We have now to find the shadow of the circular block contained in the figure, A B C D. Draw P P. The projection of the lines at 45° from the tangent points *g g* will give us at their intersection with P P in the elevation, the points G G, G G. The projections of the lines at 45° from the points *m, m, m, m* will give us in the elevation the corresponding points M, M, M, M. In the plan the parallels to *a b* and *c d* from the points *g g* meet the diagonals at the tangent points *o o*. The diagonal *c b* is represented in the elevation by its projection C B; therefore, to obtain the points in the elevation corresponding to *o o*, we have to draw from points G G, lines parallel to A B and C D, meeting the diagonal C B at O O. We thus obtain the principal points of the shadow of the circular block; the curve drawn through these points, G, M, O, G, M, O, &c, will contain the shadow of the block against the wall plane.

In Fig. 26 we have a column crowned by a circular and square capping. We obtain the shadow of the whole figure by following the method first employed for its component parts in Figs. 24 and 5. Figs. 25 and 6 may appear somewhat complicated, but in reality they are perfectly simple; we have only to notice carefully the position of the various points in the plan and follow their projection to the elevation, remarking that they occupy precisely similar positions in respect to each other as in the plan. We must remember that, to obtain the shadow of an isolated circular body, we must first find the shadow thrown by the containing rectangle, obtaining the true shadow of the contained figure by the projection and intersection of the various lines in plan and elevation. The Fig. 26 would, drawn to a large scale, be good practice for the student in the study of this system of shadows, important as being the principle for all shadows of rounded projecting bodies.

A NEW METHOD OF TUNNELLING.

AN important improvement in the working of tunnels has been patented by Messrs. Jennings and Stannard, of 84, Victoria-street, Westminster, which promises to effect a considerable saving in the cost of construction, not only of tunnels, but of subways, sewers, and other underground excavation. The principal object of the invention is to economise the labour and materials in the driving of tunnels, and to prevent the subsidence of the soil or superincumbent ground. It consists briefly of the design and arrangement of a series of steel bars or "needles" placed side by side, resembling a series of rebated boards, so as to form a temporary lining and support to the soil during the construction of the brick arch of a tunnel which is built up close to it underneath. The old system of constructing tunnels requires the insertion and use above the permanent brick arch of timbers, which are known as "crown bars" and poling boards, to enable which bars to be introduced it is necessary to excavate 3ft. at least above and beyond the crown of the tunnel arch. After the arch is built the longitudinal bars are left, and the spaces between and under them are filled in with brickwork to the outside of the completed arch to prevent subsidence of the earth. By the use of the steel needles, which are 10ft. long and 6in. wide and 2in. thick, the edges being provided with longitudinal tubular grooves and corresponding tongues, which give the needles mutual support, the ground need be excavated only to the exact section of the tunnel plus the 2in. thickness of the needles. The brick arch is built close up to this lining of needles; they are then separately pushed forward by screw-jacks as the ground is excavated for the succeeding length.

This improved method of supporting the superincumbent ground during the work of tunnelling is now in operation in the construction of the new main line tunnel of the Great Northern Railway at King's Cross. A party of engineers and representatives of the Press inspected the operation in the new tunnel last Tuesday, and the general opinion was decidedly in favour of the adoption of the invention. The ease and rapidity with which the excavation can be made by the insertion and drawing forward of the needles, avoiding the removal and disturbance of the ground overhead, and the readiness with which the brick arch of tunnel can be built, were points apparent to all who have seen the primitive and bungling nature of the old timbering. The needles can be separately pushed forward with little force, as they are linked together by longitudinal grooves. These tubular cavities or grooves allow liquid grouting or other material to be introduced to fill the space left vacant by the advancing needles between the top of arch and the earth above, so as to prevent any subsidence. The needles being narrow, grooved together to allow of free play, they can be fitted to every arch curve. In the Great Northern tunnel the inside width is about 26ft., and the invert 25ft. 3in.

Messrs. Jennings and Stannard's invention facilitates the operation of tunnelling. Many advantages are effected—(1) By the use of the steel needles unnecessary excavation is avoided, and the ground dug out only to the exact size of the tunnel. (2) A large amount of timbering in crown bars, &c., is rendered unnecessary, and is therefore not required to be bricked up and left round the arch. (3) All subsidence by the disturbance of the ground in introducing the bars, or by imperfect packing, is thereby prevented, also the consequent heavy compensations paid for damage to property overhead. (4) Time is saved, and the excavation rendered more rapid and safe. The advantages of this system are more evident in the construction of tunnels, subways, or sewers which have their crowns near the surface of the ground, and where the risks of subsidence and injury to buildings overhead are increased. In these cases the needle lining can be introduced without the slightest vibration or disturbance of the soil, in proof of which we have only to look at the successful operation in the Great Northern tunnel, the crown of which is in some parts only 4 or 5ft. below the ground, which is largely weighted with potato market buildings. The experience gained by the use of these needles has proved that a considerable economy of labour and cost has been effected, that a reduction of about 50 per cent. on the cost of all the work has resulted in the upper portion of the tunnel, or from the crown to the top sill of the face timbering. The old system necessitates an open excavation where the thickness of only a few feet above the crown exists, as it is impossible to prevent disturbance of the surface when the crown bars are used. Many other uses might be suggested for these needles, which are worthy the attention of all engineers and architects who have subways or underground works.

BUILDERS' IRONMONGERY.

THE illustrated catalogue of Messrs. Young and Marten, builders' ironmongers, of the Caledonian Works, Stratford, E., contains many articles, kept in stock, and departments of trade of importance to builders and architects. The prices are revised to date, and show a large trade profit. Wholesale trade prices are given of lead, zinc, solder, glass, colours, oils, and varnishes, plumbers' and painters' tools, plumbers' brass-work. A very comprehensive assortment is shown of cast-iron waste-not cisterns, tanks, cisterns, wrought-iron gas, steam, galvanised, and heated fittings. In this department we find

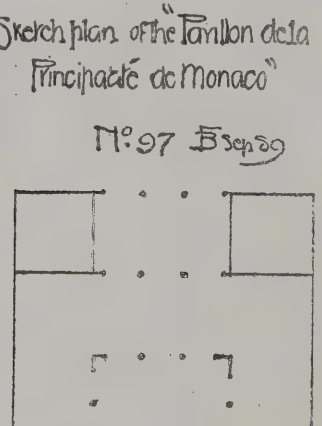
illustrations and prices of every special kind, elbow, tee, diminished sockets, from ⅛in. to 4in. in diameter. Several kinds of contractors' chain and lift and deep well pumps are shown. The sanitary department includes pan, elastic valve, cottage, and combination closets of various patterns and prices. The marble and enamelled slate chimneypieces of different designs, and varying in price to suit every pocket, are worth the notice of builders. They are made of different jamb widths, 7in., 8in., 9in., and 10in. piers in Sicilian and vein marbles, or to imitate various marbles, according to taste. The fluted pier and panel patterns are both shown. Equally low-priced are the special cheap mantel registers, curb-fenders, the overmantels, the tile grates, the elliptic Rumford Dundee stoves, and self-acting cottage ranges. The prices of the latter are remarkably low—from 12s. to 15s. 6d. with oven only, and from 15s. to 18s. 6d. with oven and boiler, the last price being for a 36in. opening. Stronger ranges vary from 16s. to 29s., according to width and fittings. Hot-water fittings and apparatus, heating stoves, stable fittings of very inexpensive and effective design, and a variety of miscellaneous ironmongery and castings, including locks and door furniture, gas-fittings, electric bells and fittings, will be found illustrated and priced in Messrs. Young and Marten's catalogue, which ought to be in the office of every architect and builder, house-furnisher and ironmonger.

CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—XX.

By Banister Fletcher, Jun., A.R.I.B.A.

THE MONACO PAVILION.

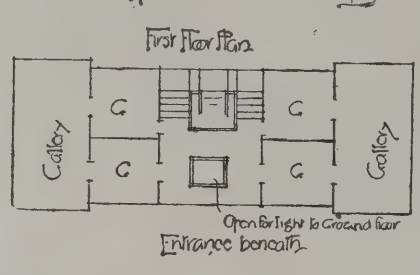
THE architect is M. Tantz. Occupies a space of 358 square yards, and is situated almost opposite the end entrance to the Palais des Beaux-Arts. It is in the Italian Renaissance style, and



constructed in pan-de-bois or brick-nog walling, covered externally and internally with plaster. The plan is as below. The central hall roof is supported on columns, and is tiled. The four angle towers are carried up separately and joined together at first-floor level by a balcony over the intermediate parts. The towers themselves are arranged as open "belvederes," and have flat-pitched tiled roofs, the eaves being supported by wooden brackets painted red. There is a greenhouse at the back furthest from the entrance. The outside decoration is nearly all white. The interior architecture partakes of the François I. type of French Renaissance, and is delicately treated. The colouring, whose key-note is gold, red, yellow, is very satisfactorily managed; the terracotta medallions being brought from Monaco.

The two followings buildings, the pavilions of the "Aquarellistes" and the "Pastellites," on account of their construction, merit little notice, being both built in the ordinary pan-de-bois or brick-nog walling type, covered profusely as to their interiors with plaster of Paris and "staff" decorations.

The "Aquarellistes" consists of a low central entrance with circular arch, over which is a quadrangular dome in zinc. Behind this entrance is the staircase leading to the first floor, which is lighted from the roof. The ground floor is also used for water-colours and prints. The elevation is quite white, with the exception of



the long wide panels on each containing the name of the pavilion, which is in gold, and also a decorative circular panel at each end of the façade at the first-floor level. The roof is in zinc where not covered with glass. The walling is 25cent., or about 10in. thick.

The "Pastellites" Pavilion is covered internally with shades of light and dark green. It is treated very floridly with bulbous pilasters, with connecting arches, the cornices supported by brackets, and in the frieze below, the names of famous *pastellites*. It is covered with a flat roof.

THE "PAVILLON DE LA PRESSE ET DES POSTES ET TELEGRAPHES,"

by M. Vaudoyer, architect, consists really of three buildings (see No. 99 from *Le Génie Civil*), a restaurant, a press pavilion (two stories), and a telegraph office.

It is all constructed in pan-de-bois (brick-nog walling). The restaurant for the press and the telegraph office are constructed with the wooden framing showing, and the brick-filling into the latter being arranged in patterns. The press pavilion itself has the wood-framing entirely covered with plaster "staff" ornamentation to the window-heads, &c. All three buildings are covered with slates. The central building is two stories in height, containing, on ground floor, committee-room, corresponding-room, telephone-room; and on first floor, two rooms for the French and foreign press, and a library. The telegraph office and the restaurant are only one story in height. The style adopted by M. Vaudoyer is, as will be seen by the drawing, tolerably simple, the enrichments over the doors and windows being such as could be executed with ease in "staff."

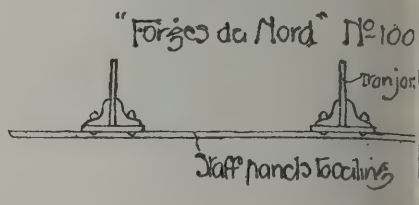
THE BUILDING OF THE "FORGES DU NORD"

is an iron structure consisting of one large gallery. It consists of iron uprights and intermediate iron entrance steps, and iron flooring with sheet-plates ribbed to prevent slipping. The ceiling consists of iron joists, "staff" filling in, which, after careful examination, I found was glued to the underside of the joists.

THE "TURKISH TOBACCO PAVILION"

consists of a large hall. The design is curious, with projecting circular piers at the angle, and the deep projecting flat roof covered round them. The piers are taken through the roof and are used as flag-posts. The three windows in the façade are formed with Tudor arches. The whole façade is plastered and painted in Arabesques under the eaves. This probably necessitated the deep projecting roof to protect them.

Along the "Avenue de la Bourdonnais," we notice the Belgian commission building facing the interior gallery of the "Expositions diverses." There is nothing remarkable about its construction; but it is a composition characteristic of the modern Belgian school, in which the grouping, colouring, and general effect are so eminently happy, and which makes one wonder why there is such a poor show of Belgian drawings in the "Galerie Rapp," when, as a matter of fact, modern Belgian architecture is anything but commonplace, from the Palais de Justice at Brussels downwards. The pavilion is composed of a central hall, with an aisle on each side, with a steep central roof hipped from each corner



which is covered with green slates, and has a lantern and quaint flèche over.

The pilasters are in blue Belgian stone, which looks like, and is often taken for, granite, the same stone having been used in the Brussels Palais de Justice.

The circular columns to the entrance are in polished granite. The front is entirely in stone and marble, but the sides of the buildings are in brick and tiles, &c., forming exhibits.

The building, erected by the Vieille Montagne Company, is constructed to show the uses to which zinc may be put in buildings. It is a one-storey building with a low tower, and is labelled "Façade en zinc, peint au silicate (imitation pierre blanche"), and in truth it is a good imitation, for it is only by tapping it that one discovers that the whole façade is in zinc. Even the columns are faced with zinc. It has an iron framework.

THE WEIR HOUSE, MAIDENHEAD.

THIS house has recently been erected on some land immediately opposite the well-known Clieveden Woods. The walls of the ground floor have been erected in red brick, and the upper portion being in half-timber, with backing of adamant cement, which has been left white. The roofs have been covered with dark Broseley tiles, which have been executed by Messrs. Braby, of Belvedere-road; and the roof of the turret has been covered with copper by Messrs. Benham and Froud, who have by the use of a solution brought it out a good copperous colour, which presents a pleasing contrast with the other colouring. The designs were prepared by Mr. T. Searancke Archer, F.R.I.B.A., of 2, Gresham-buildings, London, E.C., and the work was carried out by Mr. Joseph Higgs, of 25 and 26, Upper Park-place, London, N.W.

CHIPS.

Among the adjudicators in bankruptcy announced in last week's *Gazette*, the name appears of Walter Graham, of Air-street, W., architect.

Extensive additions are in progress at the lunatic asylum at Fishponds, near Bristol. Mr. A. J. Beaven, of Bristol, is the contractor.

On Sunday week Mr. William Gray, sanitary inspector for the Knaresborough Union and inspector of the new drainage works at the Little Wonder, Harrogate, committed suicide at his residence in Harrogate by cutting his throat with a knife.

Messrs. John Ross and Sons, the contractors for the Black Isle Railway, commenced the construction of this line last week with a large staff of workmen. The contract price is over £54,000, and the work is to be pushed forward as rapidly as possible.

At St. John's, Torquay, one of the largest churches built from the designs of the late Mr. George Edmund Street, R.A., the morning chapel, situated on the south side of the chancel, has just been furnished at the cost of one of the churchwardens—Major Bridson, J.P.—as a memorial. It is divided from the chancel and south aisle by metal grills, and is seated with oak carved benches, the handiwork of Mr. Harry Hems, of Exeter. There is also a reredos of carved oak, containing a painting of the Annunciation, and an altar table with a marble front to it. The four niches in the reredos Mr. Hems has just filled by carved statues of oak in the round—of angels in attitudes of adoration. A latten brass, representing an angel with outstretched wings bearing an inscribed scroll, has also been placed in the chapel. This brass is inlaid upon a polished slab of grey Dove marble.


"THE·WEIR·HOUSE"· MAIDENHEAD
MR T· SEARANCKE ARCHER· FRIBA· ARCHT.

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ILLUSTRATIONS.

NORWICH CATHEDRAL.—JOAN OF ARC AND FAIR ROSAMOND—RUE ETOUPEE, ROUEN.—SPIERS AND POND'S NEW STORES, LUDGATE.—HOTEL SCHEVENINGHEN, HOLLAND.—THE WEIR HOUSE, MAIDENHEAD.—CONSTRUCTIONAL DETAILS AT THE PARIS EXHIBITION.

Our Illustrations.

NORWICH CATHEDRAL: INTERIOR, LOOKING WEST.

The fine double-page photograph which we publish to-day of Norwich Cathedral is from a platinotype print taken by Mr. H. Dudley Arnott, architect, of Gorleston, Great Yarmouth, who exhibited it at the last Photographic Exhibition held in the Crystal Palace. The picture also took the first prize medal at Cardiff in a similar exhibition as the best enlargement by an amateur photographer. We may add that Mr. Arnott took the Amateur Champion medal at the Richmond Exhibition. The view gives an excellent idea of the elaborate and beautiful vaulting of the nave which Bishop Walter Lehart (1446—1472) erected. Ex-Dean Goulburn fully described the carvings on the bosses of this vaulting in his big book, in which the entire series were illustrated. Bishop Lehart built the lower portion of the choir screen, on which now stands the organ, but the upper part, which is heavy and ugly, was completed in 1833. The Early Norman Tower at the crossing is lantern-like in effect, and the transepts open into it. The choir has been much more altered than the nave, and no doubt the roof and clerestory were much injured when the spire was struck by lightning in 1463. Soon after this date Bishop Goldwell re-erected them, and his work still stands a graceful and light piece of design, though the carvings on the bosses of the vaulting are far inferior to those of the nave. The bishop's throne and the stalls of the choir are all modern, and are very poor in their detail. The episcopal chair originally stood here under the central arch of the apse at the back of the high altar, the most ancient position for the throne, as at Canterbury, and in several churches still on the Continent.

"FAIR WOMEN" (FROM THE ROYAL ACADEMY EXHIBITION).

The week before last we gave four of the six Fair Women so beautifully drawn by Mr. Henry Holiday, and to-day we give the remaining two figures to complete the illustration of Tennyson's grand poem, better known as "The Dream," in which, referring to Fair Rosamond, he says:—

"'Alas! alas! a low voice full of care
Murmur'd beside me: 'Turn and look on me:
I am that Rosamond whom men call fair,
If what I was I be.

'Would I had been some maiden coarse and poor!
O me, that I should ever see the light!
Those dragon eyes of anger'd Eleanor
Do hunt me, day and night.'"

About "Joan of Arc, a light of Ancient France," little is said in the poem; but the history of the peasant-heroine is too well known to be repeated here. The cartoons which we have reproduced speak for themselves, and will be valued by our readers for their true decorative character and refined womanly grace of form.

RUE ETOUPEE, ROUEN.

This street view is from a water-colour drawing by Mr. William E. Pinkerton, architect, of Islington. It shows some quaint old gabled houses from the ancient part of the city of Rouen, much of which is now being improved out of all knowledge by the new great thoroughfares being constructed for the municipal improvement scheme.

NEW PREMISES AND STORES FOR MESSRS. SPIERS AND POND, LIMITED.

Owing to the rapid strides and increase made in the stores department of Messrs. Spiers and Pond's business, it has been found necessary to considerably increase their premises in Water-lane; consequently land was purchased, and after pulling down the old buildings, the handsome and spacious building as depicted in our sketch was opened to the public on the 17th day of Nov., 1890. The building is intended to be used as a central supply stores for such articles as grocery, haberdashery, millinery, leather goods, boots, china, glass, hardware, electro-plate, jewelry, watches, furniture, stationery, also printing and luncheon room. The building extends from Water-lane to Queen Victoria-street, with entrances in both those streets, and consists of sub-basement, basement, ground, 1st, 2nd, and 3rd floors, and is fireproof throughout. The whole of the sub-basement is devoted to a central electric lighting station, with engines, boilers, &c., complete, of about 400 horse-power; also pumps, hot water heating apparatus, hydraulic machinery for lifts, workshops, &c. The whole of the building has been faced both inside and outside with glazed bricks. The passenger lifts, luggage lifts, and lightning lifts by Messrs. Waygood and Co. The woodwork throughout is polished teak and mahogany. The main staircase is one of the principal architectural features of the building. It is built in teak and mahogany, with ornamental wrought-iron and copper lift guard. The staircase windows are filled in with stained glass, and the walls are finished with tiling, mosaic work, and faïence. The columns supporting the staircase are fine cast iron, with bronze capitals and other parts cast from models by Signor Raggi. The whole of the building, offices, wine-cellars, restaurant, and shops, down the entire length of Water-lane, are lighted entirely by the electric light, the current for which is supplied from the sub-basement. The exterior of the building is Aberdeen granite up to 6ft. high, and glazed bricks with coloured bands for the remainder. The cornice, sills, &c., are of Mansfield stone. The whole of the above works have been carried out jointly by Mr. H. A. Matear, architect, of London and Liverpool, and Mr. Sydney Hargreaves, civil engineer, London. Messrs. J. Mowlem and Co., of Westminster, were the contractors, and Mr. W. J. Allen acted as clerk of the works.

HOTEL, SCHEVENINGEN.

We publish to-day a view of the hotel proposed to be erected at Scheveningen, Holland. The drawing from which our illustration is taken was exhibited at the Royal Academy this year, and was reviewed by us at the time. The architect is Mr. Thos. W. Aldwinckle, F.R.I.B.A.

A new wing has just been added to the business premises of G. H. Lee and Co., of Basnett-street, Liverpool. It is a parallelogram 94ft. by 48ft., six floors in height, the frontage being of grey granite, Cefn stone, and Ruabon bricks. Mr. Henry Hartley, of Liverpool, was the architect, and Mr. Samuel Webster, of Bootle, the contractor; the hydraulic lift is by Messrs. Waygood and Co., of London. Alterations have also been effected in the old premises, including a new central staircase also from Mr. Hartley's designs.

There has just been completed in the parish church of Peebles a chancel memorial screen, the gift of Mr. R. T. Hamilton Bruce, of Edinburgh, in memory of his two sisters. The screen consists of three bays, each being divided into two portions by a representation of a tree stem, spreading out into branches, leaves, and fruit in the cusped head of the bay respectively, the vine in the centre, with apples and pomegranates on the sides. In the side bays are painted the Ten Commandments, and in the centre the Lord's Prayer. Above the bays are nine niches, each being filled with a kneeling figure representing a Christian virtue. The work has been executed by Messrs. Cottier and Co., of London. A memorial window immediately above is also the work of Cottier and company.

SCHOOLS OF ART.

Metropolitan Drawing Classes.—The annual presentation of the Queen's prizes and certificates awarded by the Science and Art Department to the successful students of the Metropolitan Drawing Classes, under the direction of Mr. Busbridge, took place at the Carpenters' Hall, London Wall, on Thursday, the 27th Nov., the ceremony being performed by the Duke of Fife. Prof. Banister Fletcher, F.R.I.B.A., presided. Mr. Busbridge read the annual report, showing that during the 25 years the classes had been in existence 15,000 students had passed through the various courses of instruction, and that upwards of 2,800 Queen's prizes, as well as a large number of medals and certificates, had been awarded. The classes were established in 22 local centres.

COMPETITIONS.

Lichfield.—The guardians of the Lichfield Union having decided to erect a new infirmary, it was decided to invite several architects to meet a committee of the guardians, who were to select one gentleman to be recommended to the meeting of the Board for the appointment. This was done, and Mr. W. H. Woodroffe, 214, Great Dover-street, London, was unanimously appointed.

CHIPS.

The new schools, Swindon, are being warmed and ventilated by means of Shorland's patent Manchester grates, supplied by Mr. E. H. Shorland, of Manchester.

The waterworks constructed at Campos about four years ago are about to be extended. Mr. Fredk. Beesley, M.I.C.E., of Westminster, is the engineer.

A new board school at Burham, Kent, accommodating 150 boys, was opened last week. It has been built from plans by the late Mr. E. W. Stephens, of Maidstone, carried out under the superintendence of his successor, Mr. H. Bensted. Mr. R. George was the builder.

A further stage in the St. Paul's reredos litigation has been reached, the Court of Appeal having dismissed, after two days' hearing, the application for a mandamus to compel the Bishop of London to proceed in the case.

The realise of the residue of her estate, left by Miss Pedlar, of Liskeard, for the completion of Truro Cathedral, is estimated at not less than £13,000. The money is left to the Bishop and Archdeacon Hobhouse, and is to be applied as they see fit. A great part of it will be applied to the improvement and maintenance of the services, and the remainder will form the nucleus of a fund for the building of the nave.

The Epidemic Hospital, Nottingham, is warmed and ventilated throughout by means of Shorland's patent Manchester grates, supplied by Mr. E. H. Shorland, of Manchester.

The new line of railway between Grays and Romford, a distance of ten miles, has been commenced by the contractors, Messrs. Mowlem and Co., of Pimlico. The railway is being made by the London, Tilbury, and Southend Co., from plans by their engineer, Mr. J. R. Robertson, and will for the present be a single line. Junctions will be made with the main line at Grays, with the Southend direct line at Upminster, and with the Great Eastern system at Romford station. The ground is fairly level, the deepest cutting being 24ft. Mr. George Burt, jun., a member of the firm, is superintending the work for the contractors.

The church of St. Paul, Chatham, which has been restored externally at a cost of some £1,050, was reopened on Friday last. The restoration has been carried out by Messrs. Naylor and Son, of Rochester, from the plans of Mr. J. Drake, also of Rochester.

Mr. James Hill, builder, of Warrington, was returned to the town council of that borough at a bye-election held on Monday.

At a meeting of the Architectural Section of the Philosophical Society of Glasgow held on Monday night, Mr. Campbell Douglas read a paper on "Some Architectural and Other Notes on the Iberian Peninsula." Specially prepared views to illustrate the lecture were exhibited by limelight.

The R.C. Church of St. Osburgh, at Coventry, was reopened last week after restoration and renovation at a cost of £2,500. Mr. C. G. Hill was the contractor, and Mr. T. Richmond Donnelly the architect. The stonework has been repaired and the roofs entirely renewed in pitch-pine with hammer-beams of oak. The carving has been executed by Mr. Wall, of Cheltenham.

EXPOSITION UNIV

Pavillon de la Presse et d

Fig.



Fig. 2. Plan du Rez-de-Chaussée

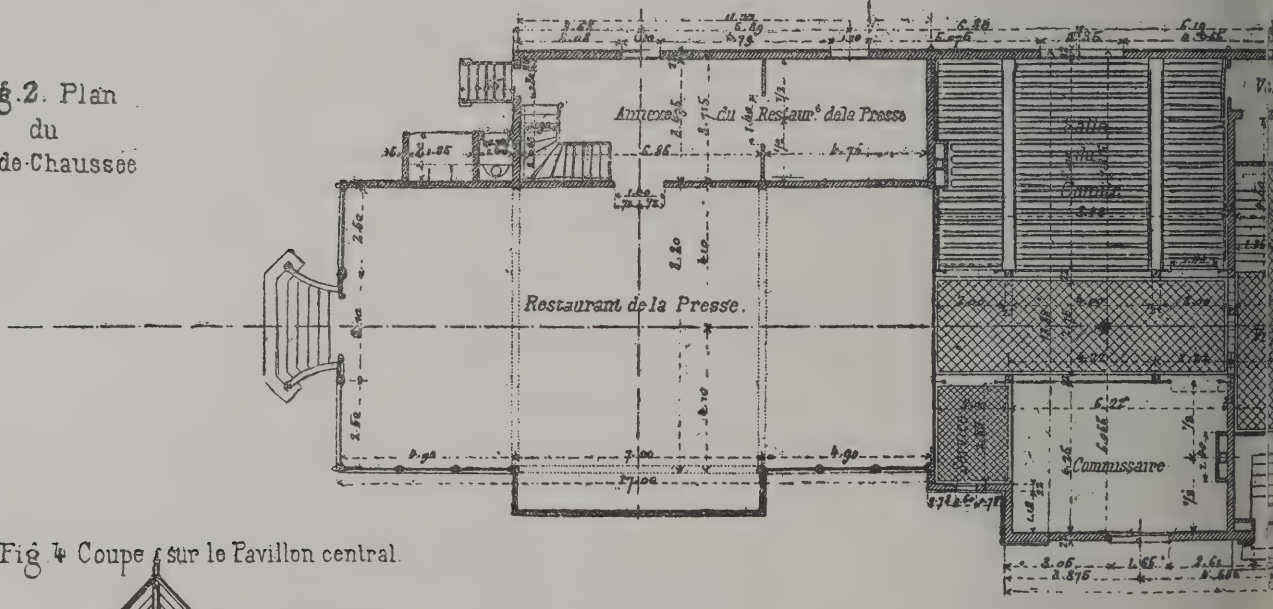


Fig 4 Coupe sur le Pavillon central.

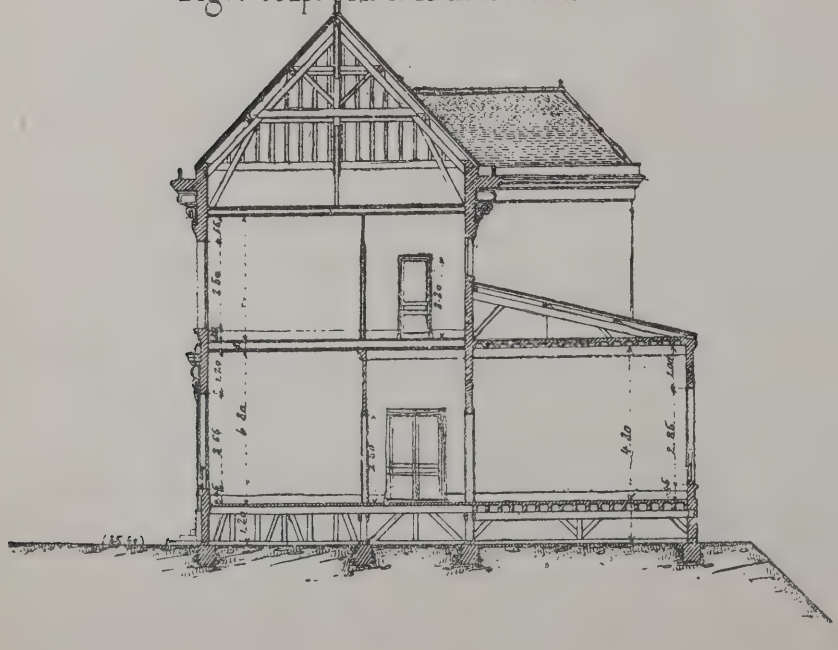
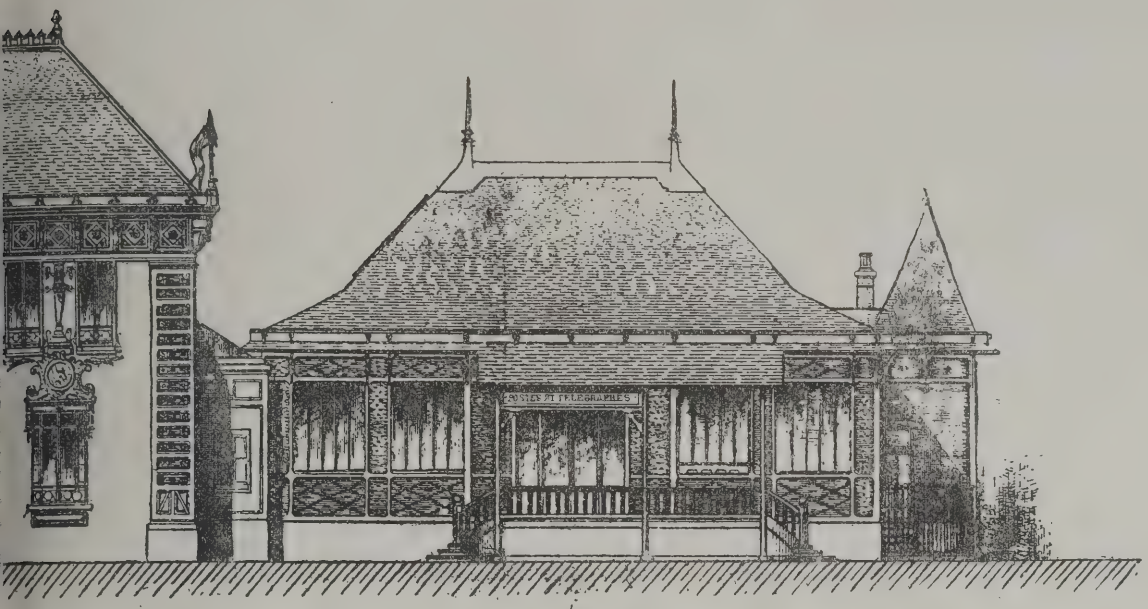


Fig. 3. Plan



LLE DE 1889

et Télégraphes



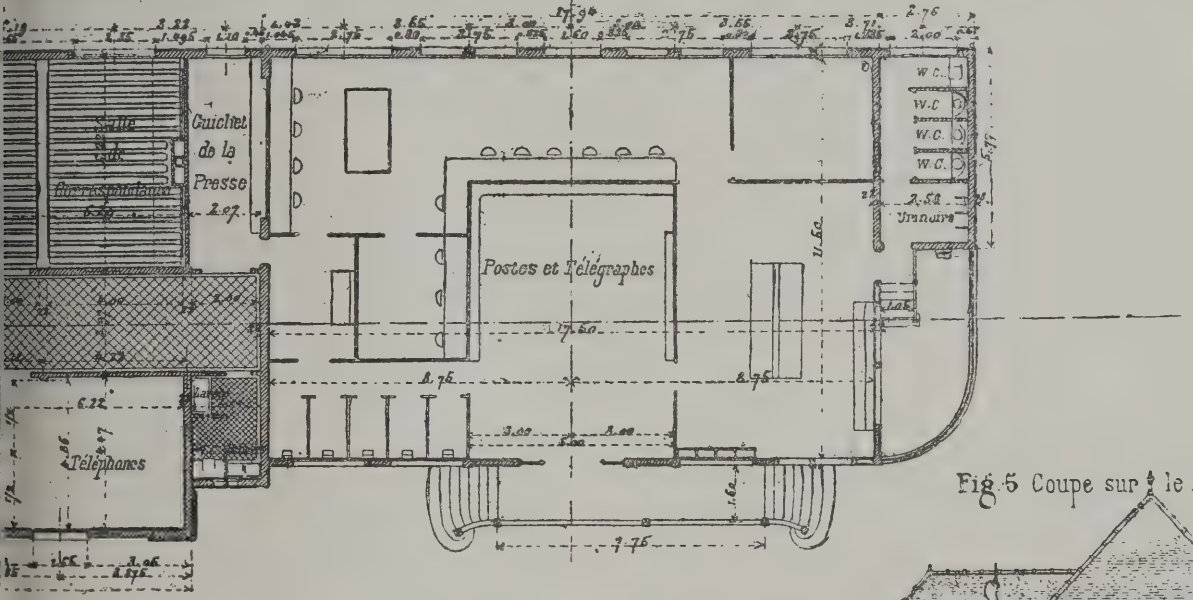
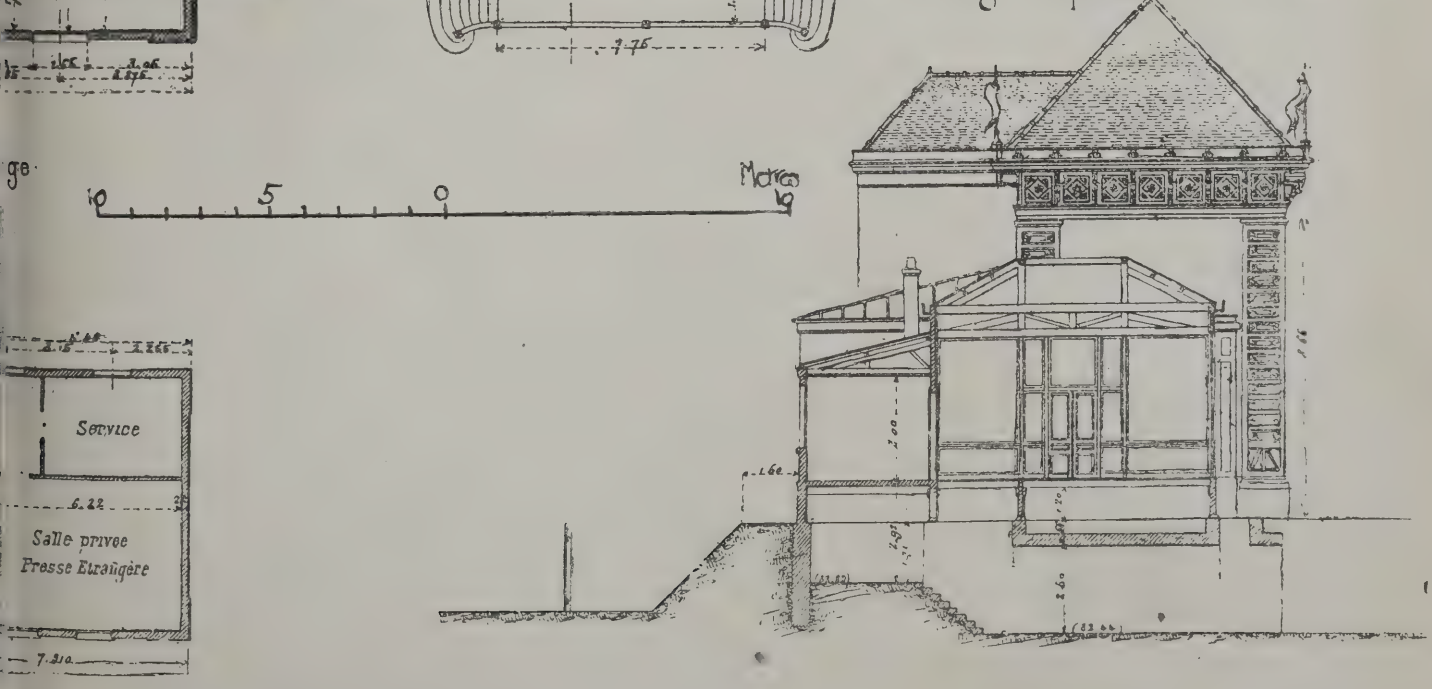


Fig. 5 Coupe sur le Restaurant



THE PARIS EXHIBITION.

WAYSIDE NOTES.

At the recent conference of architects and craftsmen at the New Gallery—how far the meeting in question merits the designation of *conference* between *designer* and *worker* I am not in a position to determine—something was said by Mr. William Morris derogatory to the reputation of the much-reviled blue or purple slate of the North Cambrian quarries. I gathered this information in the course of conversation with a friend some few days subsequent to the conference, he having attended by virtue of a ticket received as member of the R.I.B.A. At the time I remarked to him that I thought Mr. Morris might have saved himself the trouble of pointing out the shortcomings of the Welsh slate, seeing that every architect with the smallest amount of taste prefers the little green slabs obtained from Westmoreland. Since then I have observed many comments in print on Mr. Morris's allusion to the æsthetic aspect of slates as a roof covering. As a result, on hearing so much abuse of a material that has long done honourable service to man in sheltering his head from the inclemencies of the weather, I, perhaps out of what the American calls pure "cussedness," am tempted to say a word on its behalf. Without any desire to detract from the esteem in which the profession holds the green variety of slate, it may be pointed out that, as generally used, their small superficies and appreciable thickness give them at once an artistic advantage over the unwieldy, thin Welsh slate ordinarily employed. Moreover, our great familiarity with the blue or purple class of slates has bred a certain amount of contempt. Once upon a time the Welsh slate was well-nigh the only covering for roofs visible in portions of a city or town that were of modern production, and up till a recent period was the only wear with the speculative builder. Until we all broke out into a veritable scarlet fever of red bricks and tiles, the blue slate held its own. All through that serious epidemic it has stayed with us on the merits of cheapness and economy, and I doubt not but that it will remain to the end.

As used by the builder, with an eye solely to economy, nothing is so repelling as the grey-blue or grey-purple—the latter, for some reason, known as "red"—slate of the Welsh quarries. To save timbering in truss rafters and battening, his hardened Philistine employs the largest slates, and as thin as they can be split. For any resultant artistic effect, the building were as well covered with sheets of cast iron. But is it reasonable to judge the capabilities of the blue or purple slate by such roofs? I believe, on the contrary, that the possibilities of these materials have never, in the hands of modern architects—with the rarest exceptions, at any rate—been fully exemplified. I make bold to assert so much, because, in my wanderings in Continental cities, I have observed that the slates employed in the old roofs there, in nowise depend upon any special tint for their effect, than which nothing purer of its kind can be found. Clear away all the moss and lichen that gives them so silvery an appearance, and often it would be found that the colour of the most despised Welsh slate was superior to that of the material in question. The effect of such roofs is to be referred to two causes — (1) the tiny size of the slates, and (2) their appreciative thickness. Slates I have seen to which one of our "doubles" or "ladies" would be a monster, and a "countess"—to which the average modern architect is rather partial—a veritable Goliath.

Speaking of French slates, "Laxton" says: "It is a source of frequent regret that they should be split so exceedingly thin." To this I would add that it would be as well if regret were as frequently expressed that they are employed so inartistically, leading the superficial critic to condemn a material for no great fault of its own, but because it finds few, if any, sympathetic friends. If the Welsh slate were employed as in the old roofs on the Continent, such, for example, as those to be found in Normandy and Brittany, and in Holland and Belgium, it would be found almost as adapted to architectural ends as the green slate, either of Wales or Westmoreland. The latter variety—the green—is undoubtedly, viewed as crude material, more highly favoured than its humbler brother; but in certain designs I can imagine how a well-selected blue-grey slate, or a purple-grey, would be more calculated to lend harmony to the scheme of colouring. With red brickwork, red stone, or red terra-cotta a green slate is just the thing. Where there is a pronounced yellow or orange in the walling, as in stock-brickwork, buff terracotta, yellow or orange stonework, then I believe anyone who will break through trade customs and tradition, and employ Welsh slates in exceedingly tiny pieces, graduated withal, will find that there is more in this despised material than Mr. Morris, and many others, would have him believe.

There is something really refreshing and wholesomely invigorating to the architectural senses about the incident at Coventry, when three of our leading architects were requested to confer together and make observations as to the possible effect of the erection of a new campanile near the famous group of spires. It is such a contrast to the *laissez faire* of everyday architectural life. It has a positively Florentine ring about it. I only hope that the conclusion of the three observing architects, judges, assessors, referees, or arbitrators, or whatever they may best be designated, will be justified in practice. The sentimental interest attaching to the three spires will disappear in a measure when No. 4 is completed, but sentiment of this nature has to give way to practical necessities in cases like these. The competition for the new campanile should prove interesting to the profession.

The Institute Council, I understand, are deliberating as to the award of the gold medal. Up to date the medal has been awarded to fifteen foreigners and twenty-eight Englishmen. I am told that there is an unwritten law whereby the medal is awarded twice to British architects to once to foreigners, that is to say every third medal goes abroad. Consequently, British architects are two medals in arrears, if one may look at matters in so prosaic and mathematical a light. The next two medals should be kept in the country, after which a fair start can be made, which should mean two more medals to British architects. Thus, four medals should be dispensed—not a bad term this—at home, before a foreigner is again the recipient. If I had the honour to be an Institute Councillor, I should move that no foreigners need apply. They might provide their own medals. Distributed in a broader spirit, there would be found plenty of worthy recipients for the token in the British Isles without offering it to architects who can find no use for it, and don't require it, like Mr. Ruskin.

In *A.A. Notes* for December, Mr. F. M. Simpson writes on "Painters' Architecture," concerning which, as may be imagined, much may be said. Reference is made to the curious organ-case in Mr. Frank Dicksee's "Harmony." Some years back I was looking at a print of this picture in a shop window in Moorgate-street. By comes a man who stops beside me to look at the print. He was a perfect stranger, and, so far as I can remember, I did not remove my gaze from the picture. Nevertheless, says this individual, "Did you ever see such an organ! Isn't it a wretched thing?" &c., to some extent. "Here, take my card; I'm an organ-builder." This man should have got on in the world, if "push" will do anything. What good, however, he thought I might do him I cannot to this day comprehend. If I said anything it was merely in the form of monosyllabic affirmations or negations, and being then, as now "'umble" in my calling, like the celebrated Mr. Heep, I cannot flatter myself that he recognised me as pertaining to the architectural ranks.

The Oswestry competition has gone in the narrow way. The report of the meeting of the O. town council to consider the award of Mr. Thos. M. Lockwood, of Chester, the referee, is very pleasant reading. It may be found in the *Oswestry and Border Counties Advertiser* for the 26th ult., a copy of which a correspondent has kindly forwarded to me—many thanks to him. In Mr. Lockwood's report he states that 26 sets of designs were sent in, and that he recommended No. 9, as numbered by the authorities, for first place. Before the sealed envelope was opened, some discussion took place, and a member of the Council wanted, evidently, to "run" a friend. I won't however, actually make this charge against Mr. Councillor Porter, of the Oswestry Town Council, but merely state that he is reported to have said that "his mind was fixed on No. 21." From "No. 21," as it appears in the paper, the gentleman who sends it has drawn a line with his pen to the margin, whereon he writes the legend, "*A Local F.R.I.B.A.*" Readers may thus draw their own conclusions. The endeavour to run No. 21 failed signally, and it is to note the impartial bearing of the Mayor and the great majority of councillors in these discussions that makes the report such pleasant reading. Mr. Cheers, of Twickenham—a very successful competitor in many instances, as it seems to me—was the fortunate "9"—the "magic number," is it not?

In the *A.A. Notes* the report of the Special Committee for the Revision of the Rules of the Association has been published. The first point that strikes one about the proposed rules is that they are primarily divided into two parts—"Constitution" and "By-laws." I cannot say that I have sufficiently studied this matter to give an opinion as to the advisability of this division; but I have received a letter from a friend who wishes me to say something as to this, and as to the proposed increased entrance fee. My correspondent wrote before, in the summer, it may be remembered, touching the Requisition that any alteration in rules affecting constitution or subscriptions should be dealt with by all members. It appears that this requisition necessitated the two divisions "Constitution" and "By-laws," since the committee had first to determine what the constitution of the A.A. was. My correspondent thinks the division meaningless, unless the constitution portion of the rules be made more difficult of amendment, after the nature of a charter. So far as I can make out, his chief objection is to the method of voting by show of hands, and I must confess that the last part of the proposed rules seem specially framed to admit a small number of active members to modify the constitution with very little difficulty. The Requisition of last summer asked for voting-papers in matters of import, and the new rules allow merely a show of hands. I have all along urged that matters of vital importance to the Association should be determined by voting-papers. Otherwise, what could not over-zealous committees and packed meetings do? Members thinking that voting-papers should be adopted, and having definite opinions at the present position of Association matters, should not fail to attend the meeting at Conduit-street on Friday next—to-day week—when it may be that much will have to be settled for future weal or woe. Let us sincerely hope and trust that it may all be for the best.

I am afraid there is no respect for authority among the wicked young men at the Association who boss the remarkably enjoyable Lyric Club Concerts. You had a brief notice of the last one last week, but you did not print "A Lyric of the R.I.B.A. (from Dæ-vy Jones's Locker)," which appeared on the back of the programme. I think you ought to:—

"Of Conduit Street hast heard the name?
Does number nine still stand there?
Oh, yes; I think I know its fame
And sometimes hap to land there.
Why, *that's* where architecture's sleep
Is sound amid the ranting,
Where pedants prose and students weep
And look for what is wanting.

Just see the list of rusty *cranks*,
The papers for the session—
I hear the endless 'votes of thanks'
Drag on in dull procession.
Come newer men; come, will you not?
And give us light and leading,
And slit this red-tape at the knot,
For youth and art are pleading."

Dæ-vy Jones.

I always thought Batsford was the destined prophet of a new moral gospel. If any one doubts it, next time he wanders into 52, High Holborn to buy—to read up Architecture and Science on the cheap I mean—let him invest a shilling in Mr. Fawkes' little book, just out, called "Three Christian Tests." The author is known to most of us in quite other fields of authorship, but I never read him with greater interest before, and right down seriously recommend his latest effusion to all right-minded men. "We are all Socialists now," as that prince of all the virtues, Sir William Harcourt, said long ago, and it is true enough at any rate, I hope, so far as an agreement with Mr. Fawkes in his application of the "tests" of Love and Brotherhood to Christianity is concerned. The bases of his pro-

positions are ingeniously constructed on analogies curiously drawn from natural science and biology, and the earnest tone of simple faith in the good and true which pervades the book throughout is very refreshing—perhaps infrequently so now-a-days. Goth.

ROBERT BOYLE AND SON, LIMITED.

THE fifth annual meeting of this company was held at the City Terminus Hotel on the 26th ult., when a dividend of 12½ per cent. was declared on the ordinary and deferred shares, one-sixth of the profits earned being placed to the reserve fund, and a balance of £1,299 carried forward to next year.

The directors for the year and the auditor, having been unanimously elected, Mr. Robert Boyle, in acknowledging the unanimous vote of thanks accorded to the board and to himself as managing director, said: I beg to thank you on behalf of my co-directors and myself for the very cordial manner in which you have recorded your approval of the report which has been submitted to you. When the prospectus of this company was issued five years ago, I showed the confidence I had in the business by taking, practically, the whole of the purchase-money in shares in the company, I holding fully three-fourths of the shares issued, to which I have added as opportunity offered. I also personally guaranteed a minimum dividend of 10 per cent. each year for the first five years, which period having now elapsed, you are in a position to judge as to how I have fulfilled my undertaking. I trust, as I also believe, that the next five years will be equally as successful, the demand for the ventilating and sanitary appliances of the company increasing every year, both at home and abroad. The latest improved form of the self-acting air-pump ventilator is giving great satisfaction wherever used, and though of superior power and make, being constructed of the best rolled steel plates, galvanised, and the workmanship of the highest class, is sold at about fifty per cent. less in price than the inferior forms previously manufactured. The foreign agencies are progressing satisfactorily, the air-pump ventilator and other appliances being applied with continued success to an ever-increasing number of important public buildings in Germany, France, Russia, Belgium, Italy, Spain, Holland, Denmark, and Norway and Sweden, also America and Australia. You will doubtless have seen from the published accounts that I have during the past year visited Egypt, India, China, and Japan, and I believe a good foundation has been laid for an important extension of the company's business in those countries, where we have already ventilated a large number of Government and other public buildings. I have made surveys and furnished plans and estimates for the ventilation of, amongst other buildings, the Khedive's Palace, Cairo; the drainage of Bombay; French Cathedral, Canton; the Summer Palace of the Emperor of China, Pekin; new Houses of Parliament, Japan; and the Imperial University, Japan. I have also submitted a scheme to the Chinese Government, through Li Hung Chang, the great viceroy, whom I had the honour of meeting at Tientsin, for the improved sanitation of Pekin. You will have seen, from recently published reports of experiments with our system of ventilation in China, that it has proved to be most suitable for the requirements of that country, where open pipes and other contrivances have proved useless, and you will be glad to learn that as a result of these tests we have already executed important contracts in China, whilst others are now being arranged. It is my intention to proceed early next year to South Africa, where we have always done a large business, but which I believe to be capable of considerable development if systematically worked up, and I trust at our next annual meeting to be able to submit to you, as the outcome of my endeavours, results which may be considered satisfactory.

FORTIFICATION.*

MAJOR G. SYDENHAM CLARKE, C.M.G., R.E., has written a treatise on fortification, a subject that has less claim on the attention of military men in England than it has in France or Germany. The insulated position of the British Isles has been, perhaps, the chief cause why so little attention has been drawn to the subject of land defence. Major Clarke is a competent writer on this and other subjects, and has brought to his task a large amount of valuable information. He inquires what remains for fortification to accomplish, and what kind is best adapted for our purpose. For this purpose the first chapters are devoted to an account of the sieges of Marlborough and Eugene, the Peninsula defences, the wars of Napoleon, the Russo-Turkish campaigns, the Franco-German war, the works constructed in England after 1859. The results of these operations, their weak points, and the evolution of the art of defence are pointed out and principles defined that ought, according to the author, to guide future works. Major Clarke says: "In the works constructed within the past thirty years at our home ports and fortresses abroad, no sufficient indication of the results of experience obtained in the Peninsula, the Crimea, and the American Civil War can be traced. Some of these works might have been designed by clever cadets, quick to recognise the niceties of technical artifice, but unable, from sheer immaturity of thought and want of study, to grasp the broader aspects of the science." The summary of recent proposals by eminent foreign authorities contain many ingenious inventions. The disappearing cupola for the 53mm. quick-firing gun of the Schumann type, provide little sight holes in the side armour, so that by raising the cupola a view of the field of fire can be obtained. Fire is directed from the outside. The rate of fire is 12 to 15 rounds per minute. The weight of shell is 5½lb. The cupola is just overbalanced by a counter-weight. The firer sits on a seat and traverses the cupola by placing his feet on the spokes of a vertical wheel. The shield and gun rotate together. Other forms of cupola which are raised to the firing position and then disappears from view, are shown by engravings. The subterranean fort, by M. Mougin, consists of a "huge block of concrete buried in the ground, and carrying on the top three cupolas, each mounting 15-cm. guns, four disappearing cupolas, each having two machine guns, complete the armament." In this block of concrete are observing stations, electric lights, ventilating fans, and all necessaries, and it can be garrisoned by 30 or 40 skilled mechanics. The oscillating cupola, by Mougin, is very ingenious. The chapters in which the author deals with the development of arms and the requirements of modern fortification will be read with interest. Typical sections of redoubts are illustrated, and these are the bases of the defence of a position. The infantry redoubts should be, he says, of the simplest form, giving full development of rifle and machine gun fire; have efficient obstacle, shelter for the whole garrison, which should not exceed a half-battalion; unimpeded interior communication; and, lastly, invisibility. These requirements are discussed in detail. For shell-fire, sand or light soil are the best. Flat slopes offer great advantages. Stone and iron casemates have received their death-blow since the Shoeburyness experiments of 1884.

The author states the general conditions of the problem as regards coast defences. The changed construction and fire of ships, penetration of projectiles, the barbette mounting for guns for coast defences, and the development of armoured ships, illustrated by the types of British warships and those of France, are interesting questions dealt with by Major Clarke. The author describes the advantages and disadvantages of various modes of gun-mounting in a categorical form, including shielded casemates, Grüson battery, turret, as at Dover, armoured cupola, open battery with shield, barbettes, &c. These remarks are well worth the attention of our miltary engineers. Altogether the work is an able exposition of the subject, and will take its place among the higher class of textbooks. Principles, rather than mere technicalities, have been dealt with, and Major Clarke has shown in what directions we can look for improvement in construction of coast defences.

* Fortification: its Past Achievements, Recent Development, and Future Progress. By Major G. Sydenham Clarke, C.M.G., R.E. London: John Murray.

BOOKS RECEIVED.

Repairs: How to Measure and Value Them, by George Stephenson (London: B. T. Batsford), is a very serviceable handbook on the subject. As Mr. Stephenson points out, the lump system of estimating repairs to rooms is not a method on which any reliance can be placed. A good specification for repairs is given by the author, and then he proceeds, from the top floor downwards, to show how to value the items, by a method of framing the estimate in the measuring book. The *modus operandi* is simple and soon learnt. Thus to measure the stripping of paper from walls, the two dimensions of length and breadth, or the round of the walls, added to the projection of chimney jambs, by the height of ceiling above skirting, makes the first dimension, kept in a left-hand column. The description against this is "strip wall and repaper." The deductions for windows and doors and fireplace are then taken, with the number of times they are taken; thus, for two windows each 7ft. by 4ft. 6in., the dimensions inserted on the left-hand column would read $\frac{2/7\cdot}{4\cdot6}$ deduct windows. The same process is repeated for doors and fireplace. In taking the height dimension for door the proper way is to take from the top of skirting, and the same with the chimney opening. The value of abbreviating the labour of writing need not be pointed out. Thus for "deduct" write Ddt., for windows Ws., for doors Ds.; but the form of abbreviation is better left to each individual. Opposite the dimension and description are the pricing and the £ s. d. columns for making out the estimate. But it is needless to enter into details about things so well known to our readers. Mr. Stephenson's little book is chiefly of value in describing the method of booking and taking the dimensions. The directions given for painting woodwork and other items, and the remarks on pricing, will be found of especial value to the student and young surveyor. Perhaps the description is rather too verbose, and a little more method in arranging the book under headings would have been desirable, also a complete page of the dimension book showing the pricing and amounts, but we take the treatise as a very useful attempt to simplify the making of estimates for repairs.——*Estimating: a Method of Pricing Builders' Prices*, by George Stephenson, Second Edition (London: B. T. Batsford), is a very useful help to those who wish to price an estimate without having to resort to a price-book. Mr. Stephenson has succeeded in removing many of the difficulties of the young architect and surveyor in this branch of his profession, and anyone who has mastered this little book will be enabled to price a bill of quantities without recourse to his Laxton. The method of the author is to take the items from a bill of quantities one by one, and to show how each can be dissected and the prices obtained. Mr. Stephenson adds the profit to each item instead of leaving it to the end of the summary. To take an item at random:—"13ft. run 6in. by 4½in. oak, double sunk, weathered and throated sill to octagonal oriel. Take 2¼in. (the cubic of 6in. by 4½in.) at 10s. per foot cube, which comes to 1s. 10½d., and add the value of mitres thus:—

	s.	d.
2¼in. of oak sill, at 10s.	1	10½
No. 2 mitres and two joint-screws (spread over 13ft.), per foot	0	4
Add for being double sunk	0	2
	2	4½

I have put the mitres at 1s. each, and the joint screws at 1s. each, including profit." The other trades are treated by the same sensible method, which will much simplify the operation of pricing items.——*Modern Rural Homes* (arranged, designed, and illustrated by the National Architects' Union, Philadelphia) comprise a series of plans and views for sixteen "sensible, low-cost houses." The title and appearance of this work have a very commercial ring about them. The designs are "copyrighted," and the authors say the first editions have had a wide circulation. The trade-catalogue notion of preparing designs for houses is not new in America, and this book, in many respects, resembles the furniture dealers' list we often receive with stock designs that they can be made to suit anybody's taste and means. Considerable variety of design is shown, and to every one an estimate is attached. The authors say: "It has been impossible for us to give one estimate suitable for all locations, therefore the figures in the book include only the bare house, sometimes with and sometimes without a cellar." The authors further explain: "that heating apparatus, plumbing, drainage, and grading are not included in the figures given." The term "bare house" is misleading, unless it means the carcase. To suit their patrons' tastes

and pocket, certain additional sums are put down for bay windows, bath and toilette rooms, cemented cellar, slate roofs, &c., which, to our mind, tend rather to bewilder than make the appended estimates reliable. The designers appear to have attempted to reduce the labour and expense of design to a minimum, to avoid all preliminary surveying, and to supply at the least cost (*sic*) the plans of houses to suit everybody. It is further stated that "a number of handsome houses have been designed by us from sketches furnished by our clients." To facilitate this mode of doing business, sheets of cross-line paper are forwarded to anybody for 15 cents., on which he can send his idea, from which an estimate is prepared without cost. The Union undertake also to furnish the plans, specifications, and details, and builder's contract, at a certain price. Surely the would-be builder of his own house cannot grumble at these terms! Some of the plans are better than the perspectives, which generally have stone or brick foundations, clap-boarded and panelled first story, and shingled roof and gables.——*Descriptive Geometry*. By T. H. Eagles, M.A., Instructor in Geometrical Drawing, and Lecturer on Architecture at the Royal Indian Engineering College, Cooper's Hill. (London: Walter Scott, Warwick-lane). Mr. Eagles' treatise is comprehensive, and a clear and practical exposition of the principal and more useful problems. We agree with the author that in order to realise the conditions presented by an abstract definition of lines and planes, the learner would do well to associate a point with the angle of a solid, lines and planes with its edges and faces respectively. A clear understanding of the subject can only be acquired by drawing plans and elevations of a few solids having one face in the horizontal plane. Points, lines, and planes are explained by isometrically-drawn diagrams, and all the more important problems are given. Plane figures, solids contained by planes, trihedral angle, sections of solids, curved surfaces and tangent planes at given points, intersections and developments of surfaces, are other chapters. The value of the book would have been much increased if the propositions had been printed in another type. The diagrams are well selected; but the letters and figures are very small and indistinct, and have apparently suffered from reduction. Mr. Eagles's work will take its place among the higher textbooks on the subject.——*Asbestos: its Properties, Occurrence, and Uses*, by Robert H. Jones, collotype plates and illustrations (London: Crosby Lockwood and Son), is an interesting work on a material that is finding its way into various arts and industries. Little or nothing is known amongst general readers of asbestos, except in a casual way. Mr. Jones has supplied the student with a variety of information respecting this useful mineral. The introductory chapter is particularly interesting. The nature of asbestos is peculiar: it is described as a "mineralogical vegetable, both fibrous and crystalline, elastic, yet brittle, capable of being carded, spun, and woven, as flax, cotton, or silk." The fiercest heat cannot consume it, and acids cannot affect it. We all know it as a valuable non-conductor of heat and electricity, and it is only fusible at very high temperatures. It was known to the Romans for its fire-resisting properties. Describing the varieties of asbestos, of which there are many, the author observes that they are silicates of lime and magnesia or alumina, compounds of silicic acid with an earthy base. Asbestos proper is a fibrous variety of hornblende or pyroxene, and differs from that of Canada, which is a fibrous form of serpentine containing 12 to 14 per cent of water. Mountain wood, mountain leather, mountain paper, are sub-varieties, but differ in the direction of their fibres, which are more interlaced. The name of pierre-à coton (cotton-stone) has been given to it by the French-Canadian miners, from the fibres being so much like cotton. Asbestos is widely diffused, being found in all parts of the world. It is found in England, in Aberdeenshire, at Lough Foyle in the North of Ireland, and is plentiful in Portugal, Spain, Italy, and Savoy. In the island of Corsica it is abundant, and is met with in Switzerland, Germany, North and South America, and Australia. The Canadian asbestos mines supply large quantities of the mineral used in America, and its quality is excellent. The Italian asbestos is also of good quality, but more flossy and silky, and holds more water than the Canadian. A chapter is devoted to the produce from Canada. The Canadian ore is easier in working, and is more uniform than the Italian; but there are several varieties—coarse, and brittle, a fibrous quality, but impure; and a white, silky, fibrous quality, suitable for textile goods. The picrolite or bastard variety, illustrated by a beautiful collotype, is brittle, and of little value. Many companies are engaged in working the mines in Canada. The various applications and uses of asbestos form the subject of other chapters. For packings, boiler coverings, fire felt, and joints of hot-air pipes, the material is very largely used, and the author describes and illustrates these applications. Its structural value is of a varied character, as, for example, as a material for fireproof floors; cold stores, filters, gas-stoves, covering for woodwork, fire-ladders, stove linings. Substitutes, such as slag wool, and their many uses, are described; and these chapters are of particular interest to the profession. Mr. Jones's handbook will be a valuable addition to the architect's and engineer's library.

CHIPS.

A receiving order has been granted in the case of William Henry Croaker and Frederick Croaker (formerly trading in co-partnership as W. and F. Croaker), Great Dover-street, S.E., builders.

The Disney Professor of Archæology proposes to deliver six lectures in the Lent Term, 1891, on the "Sculptured Stones of Cornwall, Wales, and Mann," at the Archæological Museum at Cambridge.

The Perthshire County Council have appointed Mr. George M'Kay, sanitary inspector, Girvan, sanitary inspector for the county of Perth, at a salary of £300 per annum, with expenses.

A destructive fire broke out on Sunday morning on the extensive premises of Messrs. W. and T. Farmiloe, lead and glass merchants, at 88, Nine Elms-lane, S.W. The flames suddenly burst out in a building of one floor, 140ft. by 50ft., used as workshops and stores. A great quantity of stock became ignited, and four steamers and a private standpipe did not prevent the fire from blazing for nearly two hours. Although one building was destroyed, the main premises were saved, and the fire will not interfere with Messrs. Farmiloe's business.

The subscriptions to the memorial to the late Bishop of Durham (Dr. Lightfoot) now amount to over £5,280. The cost of the altar tomb and recumbent figure will be £1,400, and the cost of the restoration of the chapter-house will be £4,000. Sir Edgar Boehm has been commissioned to execute the recumbent figure.

The new Roman Catholic Cathedral at Mandalay is to be consecrated on Monday next, the 8th inst. The building has been erected at the sole expense of a Burman convert, and it is now the most striking building in Mandalay, its spire being higher than the Great Tower of the Palace.

At a general meeting of the Institute of Painters in Oil Colours held on Wednesday week, Messrs. Walter Osborne, R.H.A., James Clark, and W. F. Calderon were elected members.

At a general assembly of the Royal Society of British Artists, held on Monday, the president, on behalf of the members, presented to Mr. Horace H. Cauty a gold watch and chain, in recognition of the services rendered by him to the Society as hon. secretary. At the same meeting Mr. Robert Morley was elected hon. secretary. Mr. Cauty has been appointed to a mastership in the Painting Schools of the Royal Academy.

At their last meeting, the council of the Corporation of the Church House concluded the final arrangements connected with the purchase of the site for the Church House, and gave instructions for some of the buildings now standing to be pulled down, with a view to commencing building operations. The first part of Sir Arthur Blomfield's design to be built is the Great Hall block, or south front.

A new mission chapel was opened last week in the hamlet of Murchington, an outlying part of the parish of Throwleigh, Devon. The chapel is Early Decorated in style, is built of Dartmoor granite, consists of a nave and chancel, and has a hammer-beam roof of red deal. It is seated for 80 persons, and cost £410, exclusive of some special gifts. Mr. James Crocker, of Exeter, was the architect, and Messrs. Aggett and Underhill, of Chagford, were the builders.

The tower of the parish church of Willersey, near Evesham, has just been restored. The work was carried out by Mr. E. W. Billey, of Willersey.

Building Intelligence.

Birkenhead.—The new Y.M.C.A. building in Grange-road was opened on Wednesday week. It is described as Victorian Renaissance in style, has a frontage of 60ft., and is faced with red bricks and terracotta. On the ground floor on either side of the central entrance hall is a shop, 28ft. by 19ft., with cellar below, and in rear of the shops are the secretary's office and a class room. Over the shops and entrance hall, on the first floor, are the lecture room or library 28ft. by 19ft., and two reading-rooms 38ft. by 19ft., and 18ft. by 15ft. respectively, folding doors being provided between these rooms. On the second floor are residential apartments for the secretary, committee-rooms, &c. The gymnasium, in the rear of the entrance hall, but on a lower level, has a floor space of 70ft. by 40ft. At the one end is a visitors' gallery, and along the west side there are dressing and bath rooms. The public hall, 86ft. by 40ft., and accommodating over 900 persons, is placed over the gymnasium, and has four class-rooms, averaging each 17ft. square. The public hall, gymnasium, and dressing-rooms are heated by hot water, and the reading rooms, library, and class-rooms with open fireplaces. The architect is Mr. W. Wallis Baldwin, Lincoln's Inn-fields, W.C., under whose supervision and that of Mr. J. C. Ogle, jun., the work has been carried out by the contractor, Mr. Alexander Bleakley, Claughton-road, Birkenhead.

Lapley, Staffs.—All Saints' Church, Lapley, near Brewood, was reopened on Sunday week, after undergoing considerable repairs under the superintendence of Mr. C. Lynam, F.S.A., Stoke-upon-Trent, and executed by Mr. A. Gilbert, builder, of Penkridge. The removal of the ceiling in the nave, which was in a dangerous condition, has revealed the old oak roof, and the plaster has been scraped from the walls. More space has been provided around the font, and the vestry, which occupied a narrow strip in the central tower, has been placed at the west end of the church. In the tower two new windows have been introduced, to afford more light, which was greatly needed, and the pulpit is now placed near the chancel arch. Externally the church has been improved by the new tiled roof over the nave, and a pathway through the churchyard has been made. The village cross, of which for many years only a fragment remained, is also under repair, from a design of Mr. Lynam, and is being executed by Mr. H. Taylor, of Brewood, and Mr. Bridgeman, of Lichfield.

Pontypridd.—On Thursday, the 27th ult., the Pontypridd Free Library was opened. The building, which was erected at a cost of £2,000, from designs by Messrs. Hennings, of Furnival's Inn, London, is situated in Gelliwastad-grove. Mr. Julian, of Pontypridd, carried out the contract. The entrance consists of a tiled porch and an inner lobby with two sets of swing doors. Directly in front, on entering the inner lobby, is the borrowers' counter, fitted with an indicator. On the left-hand side is the staircase leading to the mineralogical museum and the caretaker's apartments on the first floor. On the right is the newspaper and reading-room, having an area of 1,500 square feet. This room is lighted by a skylight extending the length of the room, with an inner ceiling light to prevent down-draughts. On one side is the counter of the lending library and an entrance to the committe-room, and the other is taken up by the magazine and reference library and ladies' room. These are separated from the reading-room by a glazed screen 7ft. high. The walls are lined with bookcases, giving, together with those in the lending library, accommodation for 12,000 volumes. Under the entrance porch and lobby is the heating chamber for warming by hot-water pipes. Between the ladies' room and the porch is a small room for the use of the book-binder. The external walls are faced with Newbridge stone, with Box-ground Bath stone dressing.

The Bills and orders intended to be brought before Committees in the ensuing Session of Parliament show a large diminution on recent years. There are only 206 deposited plans this year, as compared with 332 in the previous year, and this is mainly owing to the great falling off in the electric lighting provisional orders from 159 last year to 62 this year. The railway plans number 50 against 70 last year, and the tramways 5 against 12.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Edinburgh Architectural Association.—The opening meeting of the thirty-third session of this association took place on Thursday, the 27th ult., when Mr. John Kinross, the president, delivered an address. He touched on the need for University teaching of architecture, and for that purpose the need of endowed chairs. He advocated the establishment of a Scottish institute of architects, and discussed the question of open or limited competitions. He thought, in regard to the latter point, that the remedy was in the hands of architects themselves, who ought to discourage competitions for buildings of little importance or moderate cost by refusing to enter them. Mr. Kinross thought the overcrowding and high buildings in some parts of the suburbs of Edinburgh ought to receive attention. No building seemed high enough. The limit seemed to be the power of a man's legs, and the conclusion seemed forced upon us that God made the country, man made the town, but the jerry builder made the suburbs. Another subject to which he drew attention was the antiquated methods of our buildings. We were still deplorably behind the age in some respects. The floors were a harbour of vermin. The roofs were far from being as advanced as they should be. It was high time a move was made towards improvements in those directions. Mr. Kinross went on to speak of matters which concerned the younger members of the profession. He passed some criticism upon the excessive refinement of some of the draughtsmanship of the present day, he emphasised the value of the systematic study of old buildings, and closed with some practical advice as to to methods in designing.

Liverpool Architectural Society.—An ordinary meeting of this society was held on the 1st inst., Mr. T. Mellard Reade, F.R.I.B.A., F.G.S., President, in the chair. It has been arranged that papers on practical subjects shall be given by members of the society, chiefly addressed to students with the view of fitting them in some measure for the R.I.B.A. examinations, and the first of these was delivered by Mr. T. Harnett Harrison, F.R.I.B.A., on Monday last, entitled "House Drainage." Mr. Harrison said, "That this was a vitally important subject, and he used the word vitally advisedly, for clean air, earth, and water were absolutely necessary to health. The medical profession had only of late years become fully alive to the importance of the subject, and then, although their interest might be said to lie in an opposite direction, they became pioneers in sanitary matters; how much more, therefore, did it behove architects to pay the greatest attention to the subject?" He proceeded to demonstrate by means of a glass receiver and siphon the action which takes place when the sewers or other receptacles for sewage are not ventilated, the gases being forced through the traps by the displacement caused by the inrush of sewage or by the expansion of the gases themselves. In concluding, Mr. Harrison pointed out that "Gwilt," which was recommended as a students' handbook, was very misleading on this subject; for instance, it mentions that clay joints may be used for drain-pipes; but this mode had long been discarded for various reasons, one being that roots readily find their way inside the pipes, through the joints, and immense vegetable growth took place under the moist and otherwise favourable conditions. Part of a mat-like mass of vegetable growth was shown, which had been taken from a clay-jointed drain, and others had been found which choked the drain entirely. Rain-water down pipes may, according to "Gwilt," be used as drain ventilators, but this is not an accepted mode of effecting the purpose, since gases from some may enter the upper story windows. After some discussion on the subject of the paper, a cordial vote of thanks was accorded Mr. Harrison on the motion of Mr. Thos. Cook, F.R.I.B.A., and seconded by Mr. A. Culshaw, F.R.I.B.A.

St. Paul's Ecclesiological Society.—At the last meeting of this Society a paper, illustrated with lantern views, was read by Mr. Joseph Grimshire, on "The Existing Abbey Ruins in England." He divided the English abbeys into three classes, those still nearly or quite perfect, and this list was nearly exhausted by the mention of Westminster, St. Alban's, Tewkesbury, Bath, Selby, Sherborne, Malvern, Wimborne, Christchurch, and Ottery St. Mary, and even these, with the exception of Westminster, had lost their cloisters and chapter-house. The second class comprised those remaining in part, and utilised as parish churches, and was a much longer list: Bridlington, Waltham, Leominster, Abbey Dore, Shrewsbury, Thornham, Worksop, Milton Abbas, Dunstable, and Bindon, were among those detailed in his category. In the third class were placed those which were roofless ruins. A great number of these were to be found in Yorkshire, including Fountains, Easby, Kirkstall, Hornden, and Byland; while in other counties Tintern, Netley, Furness, Wenlock, Buildwas, Tynemouth, Walsingham, Glastonbury, and Valle Crucis were among the more beautiful examples. Other abbeys had almost passed away, including Coventry, Chertsey, Bury St. Edmund's, Abingdon, and Reading. The destroyed buildings were vast in size, and of beautiful character, and had they been spared would have formed as fine a group as the existing English cathedrals. Having compared the present condition of some ten or twelve abbeys with that shown in Buck's views drawn in 1720-25, Mr. Grimshire argued in favour of the conservative renovation of our ancient buildings, referring with commendation to the work carried out at Croyland Abbey by the rector, and to those undertaken in a more radical fashion from Mr. Aston Webb's designs, at St. Bartholomew, West Smithfield, and by Mr. Pearson at Peterborough Cathedral. He also referred approvingly to the reconstruction on the old foundations of the nave of Bristol Cathedral, from Mr. Street's plans, and the chancel of Shrewsbury Abbey church under Mr. Pearson, the last-named work being spoken of as solid, dignified, and unpretentious. He questioned whether a much more important work by Mr. Pearson, the refronting of the north transept of Westminster Abbey, was not too thorough in character; while it was too early yet to speak of Sir Arthur Blomfield's contemplated work in reconstructing the nave of St. Mary Overie, Southwark. In closing, Lord Grimthorpe's work at St. Alban's was animadverted upon in brief terms of censure.

CHIPS.

The tender of Mr. Alfred Coe, of Ipswich, has been conditionally accepted at £4,975 for the building of Westcott Schools for the Swindon School Board. Mr. Brightwen Benyon, of Ipswich, is the architect.

The first of a course of eight lectures on "The Theory of Construction," to be delivered on alternate Tuesday evenings, was given by Mr. G. A. T. Middleton, at St. James's Hall, Piccadilly, on the 2nd inst. The subjects treated upon were the principle of moments, the parallelogram and polygon of forces, the distribution of loads on supports. The lecturer then passed on to consider vertical shearing stresses, and stresses in flanged structures and rectangular beams, giving graphic solutions of the problems involved.

The organ in St. Thomas's Church, Dodbrooke, Devon, was reopened on the 25th ult., after reconstruction and enlargement by Mr. H. C. Sims, of Southampton. The new pipes are decorated with stencilling, designed and executed by Mr. R. Watson (in the office of Mr. W. M. Tollit, architect, Totnes and Kingsbridge), who also has in hand designs for the decoration of walls of chancel, inside altar-rails.

New Board schools seated for 834 children, have just been erected in the rapidly-increasing district of Kingswood, Bristol. Mr. W. L. Bernard, of Baldwin-street, Bristol, whose plans were selected in competition, is the architect, and Mr. J. Perrott, also of Bristol, has carried out the contract, for about £6,000.

A new mission hall is about to be built at Wallsend, from plans by Mr. Hope, of Shields and Newcastle. It will be Elizabethan in style, and is estimated to cost £2,500.

Sir Edgar Boehm has finished the statue of the late Emperor Frederick, which he has been commissioned to execute by the Queen, and it will shortly be placed beneath the Pearson memorial window in St. George's Chapel, Windsor Castle. The figure is above life size, and sculptured in white marble. It represents the Emperor in a standing position, wearing a military uniform and the robes of the Order of the Garter, the cuirass being decorated with the collar, badge, and star of the same Companionship, and other insignia.

New public baths, designed by Mr. S. Trevail, M.S.A., are approaching completion at Truro. The swimming-bath is 48ft. by 27ft. The contract for masonry has been carried out by Messrs. Clements, and that for ironwork and engineering by Messrs. T. Bradford and Co., of Manchester and London.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

TERMS OF SUBSCRIPTION.

One Pound per annum (post free) to any part of the United Kingdom; for Canada, Nova Scotia, and the United States, £1 6s. 0d. (or 6dols. 30c. gold). To France or Belgium, £1 6s. 0d. (or 33fr. 30c.) To India (viâ Brindisi), £1 10s. 4d. To any of the Australian Colonies or New Zealand, to the Cape, the West Indies, or Natal, £1 6s. 0d.

ADVERTISEMENT CHARGES.

The charge for Competition and Contract Advertisements, Public Companies, and all official advertisements is 1s. per line of Eight words, the first line counting as two, the minimum charge being 5s. for four lines.

The charge for Auctions, Land Sales, and Miscellaneous and Trade Advertisements (except Situation advertisements) is 6d. per line of eight words (the first line counting as two), the minimum charge being 4s. 6d. for 40 words. Special terms for series of more than six insertions can be ascertained on application to the Publisher.

Front Page Advertisements 2s. per line, and Paragraph Advertisements 1s. per line. No front page or paragraph Advertisement inserted for less than 5s.

Situations.

The charge for advertisements for "Situations Vacant" or "Situations Wanted" is One Shilling for Twenty-four Words, and Sixpence for every eight words after. *All Situation Advertisements must be prepaid.*

Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLI., XLIX., L., LI., LIII., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

THE NEW YEAR'S DOUBLE NUMBER

of the Building News will be issued on Jan. 3, 1891. The space for extra advertisements is very limited this year, and insertion cannot be guaranteed after Dec. 14, by which date at latest it is respectfully requested all orders may be forwarded.

English Bishop. (There are other Jesse windows than that at Dorchester Abbey Church, on the Thame, Oxon, which we illustrated in the Building News for August 15th last. Thus, at Wimborne Minster there is an east window of the kind from Belgium. Instances occur at Merevale Abbey, Atherstone, Warwickshire; Margaretting Church, Essex (15th century); Ettington Park Private Chapel (this is said to have come from Bishop Wykeham's chapel at Winchester); east window at Wells, and mutilated Jesse reredos in St. Cuthbert's Church there; Llanrhaidr yn Kinmerch, Denbighshire (where the glass is dated 1533). The windows of the Galilee at Durham once had Jesse trees in them, and at Chartres and Rouen Cathedrals specimens are to be seen. Many examples of the kind exist in Belgium, and among modern Jesse windows is the often-quoted one in St. George's, Hanover-square. In the Parish Church, Folkestone, the north transept east wall has just been decorated with a Jesse tree spreading all over it)

"BUILDING NEWS" DESIGNING CLUB.

Drawings Received.—"Joss," "Devil's Chimney," "Old Michael," "Regina," "Merlin," "Do No," "Gerwy," "Walmer," "Beulah," "Forward," "Waverley," "Ariel," "Office Jacket," "Quoin," "The Bogie Man," "Herbert," "Smilash," "Zummerzet," "Avancez," "Cleopatra," "Tally Ho," "Koko," "North," "Practical," "St. Gothard," "Hopeful," "Exonia," "Y. H. S.," "Rustic," "Lotus," "Tauder," "Spider," "Palæozoic," "Red Lion," "F. E. V." "B.," "Night Light," "Castle in Shield," "Over all a Bend Vert," "Bootles," "Flute," "G.," "In a Horseshoe," "Seventeen Winters," "Stanley," "Cyclist," "Higs," "Art Rambler," "Nelson," "Renaissance," "Spes," "McGinty," "Dutchman," "Syphax," "Try," "Cathetus," "O. R. M.," "Sam Veller," "Black Diamond."

Received.—E. K.—J. S., jun.—C. of S.—S. O.—J. B.—F. M. and Co.

Correspondence.

PATENTED PLANS.

To the Editor of the Building News.

Sir,—In our letter to you of the 31st October, we stated, "The date of advertisement of this patent is, we believe, the 29th October, 1890."

Our attention has recently been drawn to an advertisement in the *Patent Journal* of October 8 of Patent No. 19,624, *Hockton* and Gibbs. This printer's error led to our patent agent not noticing the advertisement.

He has applied to the Patent Office for a correction, and, at our request, for an extension of the time within which notice of opposition must be given. The Patent Office will correct the printer's error, but refuse to extend the time of opposition beyond the 8th inst. We hasten to inform you of this.—We are, &c.,

Flockton and Gibbs.

15, St. James's-row, Sheffield, Dec. 3.

Sir,—Although of opinion that the initiative in opposing Messrs. Flockton and Gibbs' claim for a "patented plan" should be taken by the Institute or other representative body, still, all free-traders in art should take up the challenge. Hence we enter the lists.

Mr. Fairfax's conclusive and able letter in your issue of Nov. 14, in our opinion, once for all disposed of any claim for originality in the so-called "patent plan," and we were under the impression that Messrs. Flockton and Gibbs would see the uselessness of taking further action in the matter. As, however, that letter seems to have been either overlooked or ignored by these gentlemen, please permit us to continue the controversy, and to point out that:—

1. The plan of the Royal Courts of Justice (*vide* illustration in Building News, October 27, 1882) embodies *all* the advantages claimed for the "patent plan": the central hall taking the place of the public hall, the courts that of the general offices, and the judges' corridor that of the official corridor. Surely a renaming of the same plan cannot constitute a claim for originality!

2. Messrs. Verity and Hunt, at Nottingham (see Building News, August 24, 1883), on their ground-floor plan, gave us another illustration, having a central corridor, with pay-office and official rooms, *with private corridor*, grouped round same, almost identical with Messrs. Flockton and Gibbs' plan (Fig. 1). As a matter of fact, as soon as Messrs. Flockton and Gibbs' plan for Sheffield Municipal Buildings was published, we noticed that it was merely a duplication of the central portion of Messrs. Verity and Hunt's Nottingham plan.

3. We ourselves, in an important foreign competition not yet decided, the plans of which went in prior to the Sheffield competition being advertised, have adopted an arrangement identical in principle with plan, Fig. 3.

We could adduce other examples of the forestalment of this "patent plan," but refrain from occupying more of your space, as, in our opinion, the first and most notable example we have named is sufficient to prove that the patent should not be granted.

For ourselves, we shall, as heretofore, plan what we consider best, and, if occasion should arise, be prepared to defend same. Still, any attempt to arrogate the brains of others should be nipped in the bud.—We are, &c.,

Leeming and Leeming.

Victoria House, 117, Victoria-street, Westminster, Dec. 1.

THE PROPOSED BELL TOWER AT COVENTRY.

Sir,—Having recently visited St. Michael's and the other churches in Coventry, as well as being a practical campanist, will you allow me in your valuable paper to offer a few remarks relative to matters that should govern the design of the tower? With regard to style, the features of the 15th century would seem to be most in harmony with the churches, and if this is so adjudged, the best termination would be an open-traceried parapet and suitably-designed light pinnacles; but these are matters for the architect. No towers are so well adapted for the English ringing as those designed by Sir C. Wren, and the St. Paul's western towers are no exception. The ringing-room is always well lighted by windows at proper height, and the bells themselves stand in their frame up on a good basis. Buttresses are seldom employed, but the inside angles are frequently cut off by masonry having a circular sweep, which gives greatly increased stability. Now the external design of a tower solely intended for ringing should boldly express the internal arrangements. Of the lower portion, we read, plainness is to be the order: this is right. The ringing-room requires to be a large apartment, well lighted on all sides; the windows must open at the top, and be glazed with clear glass, so that anyone stationed by the ringers can view the approach of a procession. Ventilation is best obtained by a trap-door into the next floor, and also by means of which the ringers can regulate to a considerable extent the amount of sound to themselves. The gas-pendant should always be in the middle. The clock should not under any circumstances be in this apartment, and provision for the weights should be in the solid wall closed over by wood. The floor above the head of the ringers should be felted, and the wall of the ringing-room wainscoted, and a comfortable fixed seat entirely round. The apartment should not be so high as to require rope-guides, which tend to increase extraneous noise. The space above will probably contain the clock, and should be no higher than required in order that the ringers may be near the bells. The bell-chamber itself is of far greater importance. The best plan is to suddenly diminish the thickness of the tower so as to form a shelf on which the timbers or girders which support the bell-frame will both stand and be well built into the substance of the tower. Corbels are seen to be bad in many a fine old tower which has no inner set-off as now recommended.

The bell-frame should be all on one level, and in this instance would be constructed to hold twelve bells, of which the present ten would be the heavy end. The windows should have externally English louvres, and each opening within should be provided with a close shutter fitted into the stonework, which can be closed during snow, and also by the ringers in case of a practice by unskilled hands. Gas must be laid on above the bells, and the lead platform should be so constructed as to let out some of the sound without letting in water on the bell fittings. Any idea of an open lantern on skew-arches would be in a ringer's tower quite a mistake. The bell-towers of Chichester, and formerly Salisbury, would not in this respect be good models. Perhaps the best form would be Magdalen tower, Oxford, but elaborated to a greater extent in the parapets, and better fenestration at the ringing-room stage. I am fully aware that windows weaken a tower if unnecessarily multiplied, but this need not be the case in providing a comfortable ringing-room. An apartment *below* the ringing-room should have a lavatory, &c., and good water supply. These matters should be devised by the architect, and not be knocked in afterwards. In a well-known clock tower the weights were forgotten, which caused a great deal of trouble subsequently.

The staircase should extend to the summit, and no ladder should anywhere be necessary. In particular, the clock attendant must not pass through the ringing-room; ringers are liable to disturbance from this cause at all times in most towers. It should not be forgotten that the mouths of the bells when at rest should be above the window sills, and that space should be made to enable a person to walk right round the frame. A slight bridge, with handrail near the big bells, should also be contrived, in order that the clappers may be adjusted without climbing up on the frame, which is always attended with danger when all the bells are mouth upwards.

It is difficult to refer to a model bell-tower. That at Quex Park, Birchington, erected solely for ringers, is peculiarly faulty, and most of our church towers have been adapted for ringing whereby floors cut windows, and the bell-frame obtains a bearing far below its main girders, which is totally wrong in principle.

St. Saviour's, Southwark, and St. Paul's Cathedral illustrate the proper size of the ringing-room and the lighting—especially the former.

In conclusion, the position of the ringers' tower at Coventry should be well considered, whether totally detached and standing near where the wreck of the old bell-frame is placed or nearer to the church itself.—I am, &c.,

A Member of the Ancient Society of College Youths.

P.S.—It is evident from inspection alone that the bells could not be rung if placed beneath the existing spire.

Sir,—I am at a loss to understand how anyone can be opposed to the practical completion of the grand church of St. Michael's, Coventry, by the erection of a campanile, or bell tower. The idea of a detached bell tower for our larger churches is by no means a new one. When a church has such a soaring and delicately tapering steeple as the church in question has, it becomes unsafe in course of time to ring a peal of bells therein.

There is no doubt the proposed campanile will add immensely to the interest and beauty of the three famous spires; these additions in ancient art always assist the dominant feature of an old building. Would that the Coventry of the 19th century was still a six-spired city, as in the 16th century, and that it yet had its lovely cross and historic gateways!

The ancient charm and delight of our old cities and towns were the numerous towers and spires, as our Old London, with its cathedral spire, the loftiest in the world, to which a detached tower formerly belonged.

No city has lost more both in points of beauty and practical use than that of Salisbury, which possessed late in the last century a choice detached campanile, one which James (the destructive) Wyatt wantonly destroyed. Through that act of vandalism, Salisbury Cathedral steeple has been silent ever since, it not having been considered safe to ring a peal of bells in England's loftiest and loveliest of spires. I am thankful that three such eminent architects as visited Coventry last week came unanimously to the decision to erect a bell tower, and that they recommend the adoption that it should be united to the *actual* church by some kind of dwarf cloister.

I devoutly trust that this Coventry dispute may lead to a restoration of the destroyed bell tower at Salisbury and Lichfield.—I am, &c.,

Joseph Grimshire.

Park House, Dalston, N.E., Nov. 28.

Intercommunication.

QUESTIONS.

[10450.]—**Ventilation.**—Seeing that carbonic acid is considerably heavier than air is in its normal condition, and proportionally still heavier than heated air, should not vitiated air be taken off at or near the floor level, rather than at the highest point of the room as recommended in the textbooks, and carried out in so many systems of ventilation? Would some reader up in the subject enlighten and oblige?—Rustycuss.

[10451.]—**Gas Stove.**—I have fixed a small gas-stove in a room, and led an ordinary wrought-iron flue-pipe across the ceiling of another room in order to reach the chimney-stack. When the stove is lit water condenses in the flue-pipe and runs out at the joints. Can any of your readers tell me the cause of this, and the best way to remedy it?—Caloric.

[10452.]—**Plastering.**—I have a quantity of plastering to do in a library, and the specification says:—"Three coats strongly gauged plastering to walls, finished with parian cement for painting." Can any of your readers say what will be the result of following this specification? Will the parian cement adhere to lime floating? I have seen many instances where parian cement-setting has left the rough coat of plastering.—X. F. K.

[10453.]—**Indurating Fluid.**—I have been told of an indurating fluid called "Browning's solution," said to be used for marbles, &c. Can anyone give me particulars of it, and say if it is colourless and effective?—Text.

CHIPS.

Mr. W. H. Radford, C.E., of Nottingham, has been instructed by the Uttoxeter Rural Sanitary Authority to inspect and report on the water supply of the town, and if the present supply is found inadequate, to prepare a scheme, with plans, sections, report, and estimate, for obtaining a further supply from the best available sources.

A special service was recently held at the parish church of Penkridge, Staffs, on the occasion of the dedication of a new pulpit. The pulpit, which is of Penkridge stone, is from the design of Messrs. Bodley and Garner, from whose designs the church was restored two years ago, and is placed on the north side of the nave. The work has been done by Mr. Bridgeman, of Lichfield, who carried out the work of restoration. The pulpit is square in plan, and has pierced tracery with shields in sunk panels, bearing the emblems of the Evangelists. The wall at the back is covered with oak panelling, from which springs an overhanging canopy, ornamented with brattice work and shields.

Nothwithstanding the activity of building operations duriug the past year, it appears from a report presented to the Coventry council by Mr. E. J. Purnell, the city surveyor, that the number of plans for new houses (188) sanctioned during the year is a decrease of 35 upon the previous year, and a decrease of 39 upon 1888. The feature of the year, however, are that plans have been passed for six new bicycle works, and for 22 additions to existing works.

LEGAL INTELLIGENCE.

Wooden Signs and the Building Act.—At the Kensington Petty Sessions, held on Tuesday, Nov. 25th (Mr. William Bird, chairman), George Jennings was summoned by Ellis Marsland, district surveyor for East Kensington, for erecting a projection from a building not of fireproof material, contrary to Section 26 of the Metropolitan Building Act, 1885, at the Earl of Lonsdale public-house, Archer-street, W. The projection in question consisted of a wooden ring 8ft. diameter, 4in. wide, and 2in. thick, with letters of wood 2ft. high in the centre of the ring, and affixed to it by 1¼ by ¼ iron bar. The whole was projected over the public way from the face of the building, and stayed to the same by iron supports and wire stays. The district surveyor recited the Section of the Act, which states that every coping, cornice, fascia, window dressing, portico, balcony, verandah, balustrade, and architectural projection or decoration whatsoever, shall be of brick, tile, stone, artificial stone, slate, cement, or other fireproof material. He contended this was a projection within the meaning of the Section, inasmuch as it was affixed to the front wall, and being of wood, and likely to facilitate the spread of fire, was contrary to the Act, and he therefore asked for an order for its removal. The defendant, who was represented by counsel, cross-examined the district surveyor as to the meaning of the term "architectural," and elicited from him that it meant belonging to a building. He contended that this projection formed no part of the building, and was merely a trade sign, and if it were dangerous or a nuisance it could be dealt with by the vestry under 18 and 19 Vic. cap. 120, Section 119. He characterised this as another attempt on the part of the authorities to deal with these so-called "sky-signs." The Bench, after some consultation, decided to dismiss the summons, as they did not consider this was an architectural projection within the meaning of the Act.

In re George Brick.—At the Birkenhead County Court on Tuesday George Brick, builder, Liscard, and formerly building surveyor to the Salvation Army, applied for his discharge in bankruptcy. The petitioning creditor, Mr. George Lampard, described as a grocer and Salvationist, of London, opposed. The Official Receiver stated that the statement of affairs showed unsecured liabilities of £256 12s. 2d. and £160 for solicitors' costs, while the assets were set down as £3,000, and good book debts at £8. Nothing had been realised from these assets, but there was a debit balance against the estate of £3 13s. 9d. for Board of Trade fees, &c. Debtor was for six years building surveyor to the Salvation Army, but left in 1888, and had since been out of employment. He wrote a book, which contained certain allegations against the Salvation Army. The manuscript of this book, which debtor valued at £3,000, and was the asset referred to, was handed to the petitioning creditor, who advanced the debtor £50. An action was afterwards brought in the Court of Queen's Bench against the debtor, for the recovery of this money, which the debtor alleged was given him as hush-money to prevent him from publishing his book. Judgment was given against him, and this sum, with costs, formed the debt due to the petitioning creditor. The Official Receiver stated that the manuscript had been handed by Mr. Lampard to Mr. Bramwell Booth. He had applied to him for it, but could not get it. After a long argument, his Honour said he thought the debtor was entitled to his discharge; but whether absolutely or conditionally he would take time to consider.

WATER SUPPLY AND SANITARY MATTERS.

Matlock Bridge Waterworks.—A report has been received from Mr. W. H. Radford, C.E., of Nottingham, in which he advises the company to take an additional spring from the Yoredale Grit. The spring yields 68,580 gallons a day in dry weather. The water has been analysed by Dr. Frankland, and found to be of extraordinary purity and softness. The company has applied to the Board of Trade for a provisional order to increase their capital from £7,500 to £20,000.

Nuneaton.—The Nuneaton Local Board have decided to adopt the process of the "International Sewage and Water Purification Co." for the treatment of the sewage of their district, and have instructed their Surveyor, Mr. J. S. Pickering, C.E., to prepare the contract drawings for an area of 800 yards of "polarite" filters, and for the remodelling of the whole of the works. The Board have also resolved to erect new pumping machinery capable of raising 56,000 gallons per hour.

The current issue of the *Proceedings* of the Society of Architects has as a frontispiece a photographic group of the members and friends assembled in front of the south porch of Canterbury Cathedral, on August 29th last, during the annual excursion, in illustration of Mr. Middleton's lecture, reported in our last issue.

Our Office Table.

About one hundred and forty architects have registered under the Ontario Architects' Registration Act, largely exceeding the expectations of the council. The *Canadian Architect and Builder* says:—"Mr. Townsend, the Registrar, was kept busy during the last hours of the final day (Nov. 5). Human nature is the same all the world over, and procrastination is the bane of architects as well as of other people. While three months were allowed in which to observe this simple act, the majority did not register till within the last week or two of the limit. One man was so careless, that his more business like partner had to rush down at the eleventh hour and do the deed for him. And now will come the examination of candidates who were caught without oil in their lamps. We presume the standard will be gradually increased, so that in the course of a few years it will be impossible for any but competent and thoroughly trained men to enter the ranks of the profession—a consummation devoutly to be wished. It is to be hoped that long before that time the legislature will have so amended the statute, that no man may assume the simple title 'architect' who has not entered the ranks of the profession in the accredited manner."

The Art Exhibition at Aberdeen, opened on Tuesday, includes, besides work by members of the Aberdeen Artists' Society and others, a loan collection of old and modern examples. Among the pictures lent, noteworthy ones are a bust portrait of Jane Maxwell, Duchess of Gordon, by Sir Joshua Reynolds; portraits by Velasquez, Vandyck, and Jamesone, and coming down to the present day, Peter Graham's *chef d'œuvre*, "The Spate in the Highlands," "Delilah," by Solomon J. Solomon, Venetian studies, by the sisters Montalba, and Lady Butler's "Inkerman." Among the Scottish exhibits are landscapes by Russell Gowans, Campbell Noble, John Smart, and Beattie-Brown; portraits by A. D. Reid, and water-colours by W. E. Lockhart (a Royal procession in Edinburgh streets), R. Wallan, and R. B. Nisbet.

The Strand District Board of Works have petitioned the Local Government Board complaining of the overriding powers vested in various companies, which practically authorise them to break up or disturb the streets and pavements at will, and which involve not only unnecessary and frequent expense, but are also injurious to the surface of the streets, and cause obstruction and inconvenience to traffic, and injury to trade and business. The petitioners contend that the public interests require that the control over the streets and pavements shall be so vested in the various local authorities in the Metropolis as to enable them to make proper regulations as to the breaking up or disturbing of the streets and pavements in their several districts. It is also urged that further powers should be conferred for making and maintaining subways in streets, and that provisions should be made requiring that such subways should be used for the reception of pipes, wires, and the like, instead of the streets being from time to time thus broken up and interfered with. They ask that these suggestions and others dealing with overhead wires may be embodied in any Bill that may be introduced into Parliament for the creation of district councils.

Sir Mountstuart Grant-Duff has accepted the presidency and Sir J. D. Linton (president of the Royal Institute of Painters in Water-colours) the vice-presidency of a society just formed in London for the encouragement and preservation of Indian art. The society has been established to foster the indigenous decorative arts of India, and, if possible, to preserve their distinctive characteristics. It proposes to further these objects by encouraging the artisans in every province of the country to continue in the practice of their hereditary handicrafts. The society hopes to extend among European purchasers and patrons a taste for genuine Indian art work, and relies upon obtaining the assistance and support of the Indian Government. It is pointed out that the Indian handicrafts are being discredited by the prevailing rage for cheapness, the example of meretricious Western taste having had a deteriorating influence on native artists. The executive committee met last week in the rooms of the Society of Arts for the transaction of business in connection with the new society.

Messrs. Williams and Co., of 18, Berners-street, are introducing a new steel "climax" casement, which possesses many useful qualities. It is weather-tight under any circumstances, however arranged to open. The same section can be arranged to open in or out, and can be hung at side, or head, or sill, or to swing. Only one detail of the stone or wood work is necessary, which is the same as prepared for glazing. Side-opening casements are hung as a safe door, avoiding sagging. The glass is always in the same plane as in a fixed light. The casement can be fitted with glazing-fillets, which avoid the ragged appearance of putty, and facilitate glazing or repairs. It has a moulded face instead of the ordinary square edges. It can be adapted to any existing detail without extra cost, and being made of steel, is very strong and rigid.

MEETINGS FOR THE ENSUING WEEK.

Monday.—Society of Arts. "Gaseous Illuminants," Cantor Lecture No. 3, by Professor Vivian B. Lewes. 8 p.m.
Surveyors' Institution. Adjourned discussion on "The Labour Question as regards Agriculture." 8 p.m.

Tuesday.—Society of Architects. "Suggestive Points of Contact between Architecture and Painting," by A. W. Rimington. 7.30 p.m.
Institution of Civil Engineers.
Bradford Architects and Surveyors' Institution. "Where to Spend a Bank Holiday," by W. Hoffman Wood. 8 p.m.
Institution of Civil Engineers. "The New Chittravati Bridge, Madras Railway," by Mr. E. W. Stoney, M.E., M.Inst.C.E. 8 p.m.

Wednesday.—Society of Engineers. Annual Dinner a Holborn Restaurant. 6.15 p.m.
Society of Arts. "Electric Lighting Progress in London," by F. Bailey. 8 p.m.
St. Paul's Ecclesiological Society. Objects of Ecclesiological interest will be exhibited and described. St. Paul's Chapter House. 7.30 p.m.

Thursday.—Edinburgh Architectural Association. "Heating of Buildings by Hot Water and Steam," by A. D. Mackenzie. 8 p.m.

Friday.—Architectural Association. Special Business Meeting for the Revision of Rules. 7.45 p.m.

The Society of Architects.—The Third Ordinary Meeting of the Society of Architects for the Session 1890-91 will be held at St. James's Hall, Piccadilly, W., on Tuesday, Dec. 9th, 1890, at 7.30 o'clock p.m., when a Paper will be read by Mr. A. W. Rimington, R.P.E. (Associate), entitled "Suggestive Points of Contact between Architecture and Painting."

Edgar Farman, Hon. Sec.
G. A. T. Middleton, Sec.

Trade News.

WAGES MOVEMENTS.

Bristol.—A meeting of the committee of the Master Builders' Association was held on Friday, when it was resolved, pending the meeting of the Conciliation Board, that the hours of work should be from 7 to 5 during the first five days in the week, and from 7 to 1 on Saturdays, with the usual hours for meals. On Wednesday week a well-attended meeting of representatives from all branches of the building trade, with several of those on strike, both society and non-society men, was held to consider the present position of the strike at Stapleton Asylum and Bedminster Liberal Club; and the action of the contractor in attempting to introduce what was regarded as objectionable alterations in the code of working rules agreed to by the Master Builders' Association and the workmen. Mr. John Curle, secretary of the Bristol Trades Council, was in the chair. A long discussion took place, and a motion was passed expressing profound regret that an attempt should be made to violate the working rules of the trade, and calling upon the whole of the trade and trade-unions generally, to morally support them in their endeavour to resist their charter of privileges being filched from them.

Lambeth Potters Object to Apprentices.—A deputation representing the potters employed in the Lambeth Pottery waited on Tuesday on Sir H. Doulton, objecting to the employment of three youths lately apprenticed to the trade, those being the sons of journeymen, and employed at their request. The workmen considered that there was not sufficient prospect of demand to warrant their employment, and that their chance of continual employment in the future was endangered thereby.—Sir H. Doulton replied that he had far better opportunities of judging the future prospects of trade than the men, and the step he had taken was

not only necessary, but a very moderate one. At the present time he had seven wheels vacant, and the immediate demands made it important that these vacancies should be filled. Moreover, no application for work from journeymen had been received. It was not his wish to over-supply the market, and none of them should suffer by this action. He refused to accede to their demand, because this would be a positive check to the future development of trade. The deputation left apparently satisfied; but Sir Henry was subsequently informed by letter that unless he agreed to take the three boys off the wheel immediately, every pieceworker would cease work at once, and every day-worker on Thursday next. By this action not only the department affected, but the whole of the skilled workmen, will be called out. Sir H. Doulton regrets the action of the men in this matter, but feels it impossible to accede to their request.

Sir Edgar Boehm has been asked by the City Corporation to send in estimates and a design for a new statue of the Queen to be placed in the Royal Exchange, the existing figure being in an unsatisfactory condition.

Holloway's Pills.—The Great Need.—The blood is the life, and on its purity our existence depends. These Pills thoroughly cleanse the vital fluid from all contaminations, and by that means strengthen and invigorate the whole system. The balsamic nature of Holloway's Pills exercises marvellous power in giving tone to debilitated and nervous constitutions.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

BATH.—For carrying out further works in front of Camden-crescent, necessitated by the landslip, for the city council:—
Ambrose, S., Bath (accepted) ... £236 0 0

BIRMINGHAM.—For the addition of separate sleeping accommodation for nurses and patients at Rubeny Hill Asylum, for the Birmingham town council:—
Barnsley and Sons (accepted) ... £2,616 0 0
(Lowest tender received.)

BRIXTON.—For alterations at the Effra Hall Tavern, Kellet-road, Brixton. Mr. R. A. Lewcock, 88, Bishopsgate-street Within, architect:—
Contractors:—

Spencer and Co.	£246	0	0
Williams...	239	0	0
Courtney and Fairbairn	227	0	0
Whitehead (accepted)	205	0	0

Gasfittings:—Winn (accepted).

CHELSEA.—For alterations and additions to No. 149a, Sloane-street, Chelsea, S.W. Mr. J. Emes, 151, Ebury-street, S.W., architect:—
Simmonds Bros., Chelsea (accepted) ... £1,020

DARTFORD.—For second portion of roads, sewers, &c., on the Westgate Estate, for the Kent and Essex Land Co. Mr. G. R. Cobham, F.S.I., Gravesend, surveyor:—

Multon and Wallis, Gravesend ...	£1,398	0	0
Wheeler, W. H.	1,349	0	0
Rackham & Bentham, Plumstead	1,274	0	0
Catley, A. T. (accepted)	1,270	0	0

GATESHEAD.—For the erection of a boys' school at the Lady Vernon Schools, Bensham, Gateshead-on-Tyne. Mr. S. Piper, County-chambers, Newcastle, architect. Mr. J. Savage, Grey-street, Newcastle, quantity surveyor:

Reed, W. and R.	£2,710	1	4
Brown, H., and Co.	2,284	10	0
Tyrie and Graham, Gateshead* ...	2,231	14	0
Lamb, S. and R., Gateshead ...	2,104	13	8

Alterations to existing school:—

Brown, H., and Co.	231	0	0
Thompson, W...	185	0	0
Lamb, S. and R., Gateshead ...	176	4	1
Tyrie and Graham, Gateshead* ...	172	5	0
Reed, W. R.	168	0	0

Rest of Newcastle.
* Accepted.

LAMBETH.—For drainage works at the infirmary, Brook-street, Kennington-road, S.E., for the Guardians of St. Mary, Lambeth. Mr. T. W. Aldwinckle, 2, East India-avenue, Leadenhall-street, E.C., architect. Quantities supplied:—

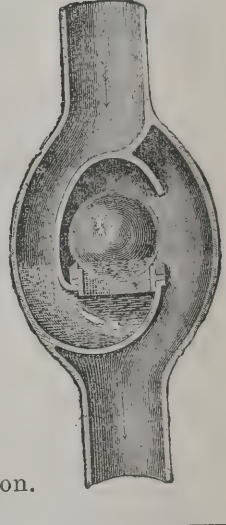
Cooper and Squires	£1,920	0	0
Killingback, C.	1,900	0	0
Peacock Bros....	1,898	0	0
Mills, J.	1,845	0	0
Turtle and Appleton	1,730	0	0
Johnson, W.	1,670	0	0
Marshall, J. G. B.	1,548	0	0
Marsland, M....	1,437	0	0
Mayo, R. (accepted)	1,350	0	0

LIVERPOOL.—For the erection of an additional administrative block at the City Hospital, Parkhill, for the accommodation of nurses, wardmaids, and staff, for the city council:—
Morrison and Sons (accepted) ... £1,175 0 0
(No competition.)



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LIVERPOOL.—For building steam laundry in Stanhope-street, Liverpool, for Mons. Kaufmann. Mr. G. H. Thomas, architect:—
Williams, V., (accepted).

LANDPORT.—For additions, &c., to the Gladstone Head beerhouse, Landport, Portsmouth. Mr. A. H. Foad, A.I.C.E., Portsmouth, architect:—

Beech, G.	£551 0 0
Crockerell, J.	456 0 0
Hall, T. P.	445 0 0
Brown, C.	400 0 0
White, F. G., and Son	399 18 0
Learmouth, W.	399 15 0
Boulton, H. F. (accepted)	399 2 0

All of Portsmouth.

LIMEHOUSE.—For alterations at the Aberfeldy Tavern, 357, East India Dock-road. Mr. R. A. Lewcock, 88, Bishopsgate-street Within, architect:—
Contractors:—

Spencer and Co.	£845 0 0
Courtney and Fairbairn	795 0 0
Reid	768 0 0
Todd	767 0 0
Salt	748 0 0
Goodall	668 0 0
Walker Bros.	646 0 0
Hood (accepted)	565 0 0

Pewtering:—

Heath (accepted)	247 0 0

Gasfitting:—

Steadman (accepted)	100 0 0

LONDON.—For alterations at the Three Nuns Hotel, High-street, Aldgate. Mr. R. A. Lewcock, 88, Bishopsgate-street Within, architect:—
Contractors:—

Voller	£1,470 0 0
Goodall	1,063 0 0
Todd	1,009 0 0
Spencer and Co.	990 0 0
Hood	983 0 0
Courtney and Fairbairn	980 0 0
Higgs (accepted)	923 0 0

Gas-fittings:—

Dix (accepted)	282 0 0

LONDON.—For building pavilion Tuffnel Park cricket ground. Messrs. R. A. Lewcock, 88, Bishopsgate-street Within, and C. W. Callcott, joint-architects:—
Todd, G. E. (accepted) ... £1,450 0 0

LONDON.—For bringing out shop-front and various alterations at 144, Stroud Green-road. Messrs. Carter and Son, surveyors:—
Houghton, E., and Son, Stroud Green (accepted) ... £294

LONDON.—For bringing out two shop-fronts and alterations at 146 and 148, Stroud Green-road, for Mr. J. E. Bedingham:—
Houghton, E., and Son, Stroud Green (accepted) ... £374

LONDON.—For stabling at New House, Streatham, S.W. Messrs. F. C. Notley and H. Riches, 59 and 60, Cornhill, London, E.C., joint-architects:—
Coulsell Bros. (accepted) ... £507 0 0

LYMINGTON.—For alterations and additions to the school in High-street:—
Basket, M., Lymington (accepted).

MULLINGAR.—For erection of an electric light installation at the Mullingar District Lunatic Asylum, County Westmeath. Plans and specifications prepared by Mr. W. Kaye-Parry, M.A., B.E., 35, Dame-street, Dublin, civil engineer:—

	Contract No. 1	Contract No. 2	Total.
Soames Bros., and Co., London—	£2,997 0 0	£716 0 0	£3,713 0 0
Latimer, Clark, Muirhead, and Co., London—	2,512 0 0	555 0 0	3,067 0 0
Rashleigh, Phipps, and Dawson, London—	2,435 0 0	629 0 0	3,064 0 0
Crompton, Ltd., Chelmsford—	2,310 0 0	—	—
Edmondson, Dublin—	2,280 0 0	525 0 0	2,805 0 0
Goolden, W. T., and Co., London—	2,271 0 0	633 0 0	2,904 0 0
Drake and Gorham, London—	2,261 0 0	—	—
The Gülcher Electric Lighting, Co., Ltd., London—	2,045 0 0	—	—
Fowler, Lancaster, and C., Ltd., Birmingham—	1,855 0 0	545 0 0	2,400 0 0
Gordon, J. E. H., London—	1,850 0 0	—	—
Mather and Platt, Manchester—	1,820 0 0	490 0 0	2,310 0 0
Verity, B., and Sons, London—	1,769 0 0	490 0 0	2,259 0 0
Sharp and Kent, London—	1,692 0 0	585 0 0	2,277 0 0
Electric Engineering Co., of Ireland—	1,677 0 0	413 0 0	2,090 0 0
Edison, Swan, and Co., Ltd., Manchester—	1,655 0 0	550 0 0	2,205 0 0
Andrews, J. D. F., and Co., London—	1,395 0 0	555 0 0	1,950 0 0
Woodhouse and Rawson, United and Ltd., London—	1,357 0 0	433 0 0	1,790 0 0
Alliance Engineering Works, West Drayton—	1,310 0 0	445 0 0	1,755 0 0

LOUGHBOROUGH.—For converting house into shop, Leicester-road, for Miss Seward. Mr. G. H. Barrowcliff, architect:—
Bricklayer, plasterer, and slater:—

Moss, W., and Son	£144 0 0
Barker, T. (accepted)	143 0 0

Carpenter, iron-founder, and plumber:—

Corah, W.	200 0 0
Johnson, M. M. (accepted)	195 0 0

NORTH WOOLWICH.—For alterations at The Albion beer-house, Albert-road, North Woolwich, for Mr. Strudwick. Mr. E. Brown, 1, Princess-street, Spitalfields, E., architect:—

Goodall, S.	£616 0 0
Mower and Son	587 0 0
Taylor, J. A.	549 0 0
Hawkings, S. W. (accepted)	445 0 0

SLAITHWAITE, WEST RIDING.—For laying drains in Varley-road, for the local board:—
Balmforth, J. (accepted).

SOUTH HORNSEY.—For building stabling in Howard-road, South Hornsey. Mr. R. A. Lewcock, 88, Bishopsgate-street Within, architect:—

Hayworth and Sons	£427 0 0
Goodall	359 0 0
Thompson (accepted)	330 0 0

STAMFORD HILL.—For works at the Weavers' Arms, Stamford Hill. Mr. R. A. Lewcock, 88, Bishopsgate-street Within, architect:—
Pewtering:—

Heath, T. (accepted)	£109 0 0

Gas-fitting:—

Winn (accepted)	60 0 0

ST. JOHN'S WOOD.—For pulling down and rebuilding the Portland Arms Tavern, 60, High-street, St. John's Wood. Mr. R. A. Lewcock, 88, Bishopsgate-street Within, architect. Quantities by Mr. R. R. Brede:—

Spencer and Co.	£6,240 0 0
Toms	5,967 0 0
Voller	5,926 0 0
Anley	5,828 0 0
Goodall	5,807 0 0
Gould and Brand	5,793 0 0
Todd (accepted)	5,718 0 0

WEDNESFIELD.—For new foundry and offices at Wednesfield, near Wolverhampton, for Messrs. Vaughan and Pedley. Mr. B. Baker, Willenhall, architect:—

Bradney and Co., Wolverhampton	£3,795 0 0
Tildesley, T., Willenhall	3,747 0 0
Guest, J., and Son, Brettle-lane*	3,615 15 0

* Accepted.

WOODSTOCK.—For the repairs of a wall opposite Woodwards, for the town council:—

Mitchell, J. J. (accepted)	£55 0 0

(Lowest of four tenders received.)

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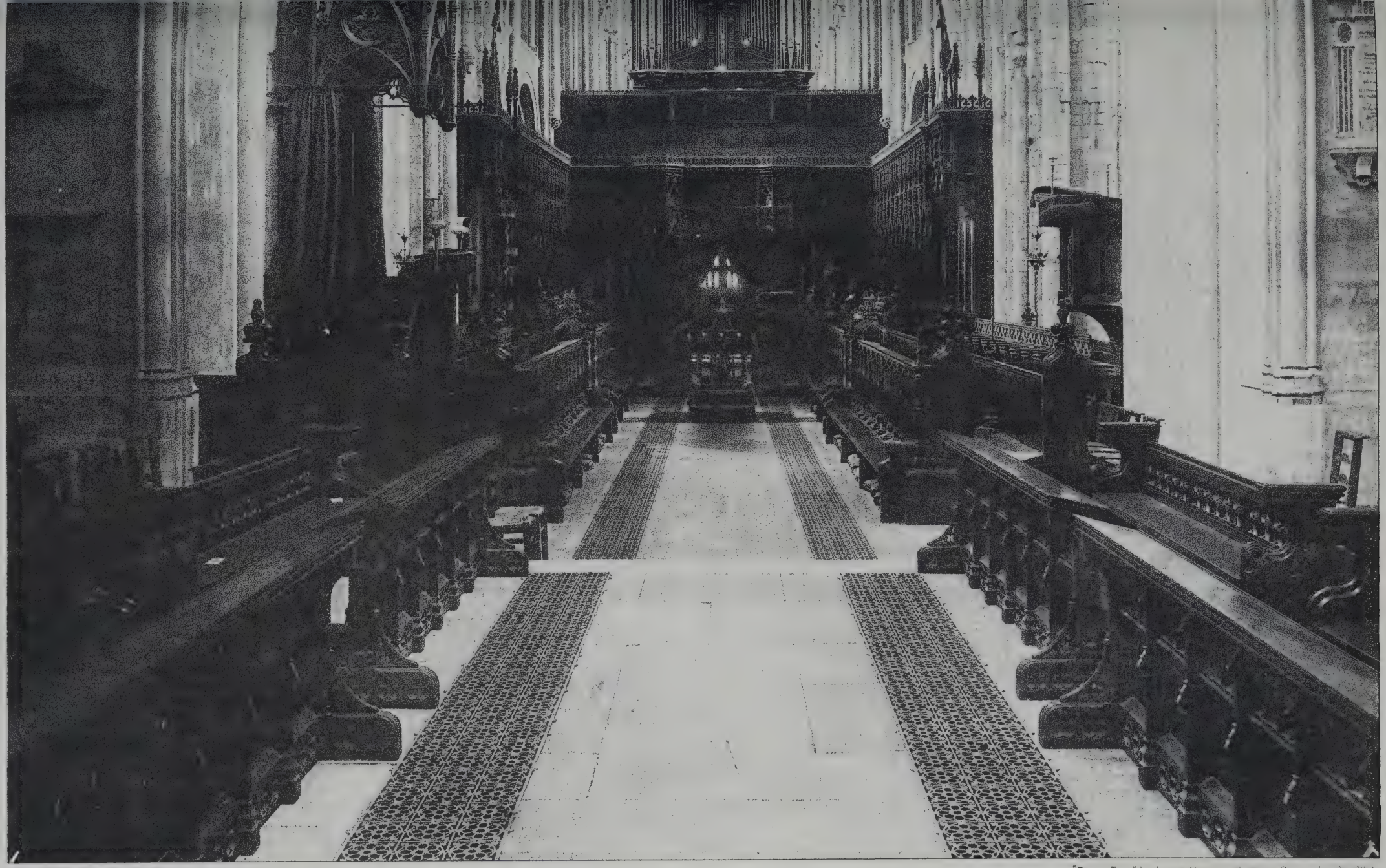
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RUE · ETOUPÉE · ROUEN · FRANCE ·

FROM A WATER-COLOUR DRAWING BY W.E. PINKERTON.

HE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LIX.—No. 1875
FRIDAY, DECEMBER 12, 1890.

TOWN PRACTICE.

THE difficulties which beset the architect in his duties connected with building erations in London are often considerable, the occasional disputes and actions which me to light reveal. It is not a mere matter preparing designs and contracts, but of ranging with the owners of adjoining operties as to lines of boundary, light and r, of satisfying the requirements of the etropolitan Building Acts; and, to make the ity more arduous, of pacifying his own ient, and proving to him that what is pro-osed is the best under the circumstances. o do all these things is rather perplexing, pecially that of satisfying the mind of a ient who has a doubt as to the ability of his lviser. These duties become more onerous in rge towns, where the rights of owners and e requirements of the law have to be mplied with.

In the Queen's Bench Division the other ay two actions were brought by an architect recover from two defendants his fees for ork done and for wrongful dismissal, the rcumstances detailed in which show how any prevarications the architect has to ce through no fault of his own, and how sirable it is that he should be fortified in is position by a knowledge of the claims for ght and air, and that the plans he prepares r new buildings in streets are fully in mpliance with the law. The defendants this case were evidently afraid of the laims made by owners of adjoining premises, nd under threats to restrain them by in-nction from proceeding with the erection f their buildings on opposite sides of a new treet known as Copthall-avenue, London Vall, they declined to take the advice f their architect, and discharged him, and aid various sums to meet the claims for ompensation made upon them. In their efence they alleged that their architect was ncompetent, and counterclaimed against him o recover the sums paid for compensation o adjoining and opposite owners. Notwith-tanding the plaintiff's assurances that if his lans were carried out no valid claims could e made by any of the owners, the defend-nts refused to adopt this course, though hey afterwards, it appears, practically arried out his plans, which, as it was also roved, had been carefully prepared. Ultimately, during the progress of the case, erms were arranged between the plaintiff nd defendants, the sums claimed for fees vere agreed to be paid, and judgment was ntered for plaintiff on both the defendants' ounterclaims, while the charges of incom-etency were withdrawn unreservedly. The esult, as Mr. Justice Charles says, was nost satisfactory to all parties. At the same ime, we cannot help feeling that the archi-ect had suffered an injustice, to say nothing f the inconvenience and trouble of having o take these proceedings to vindicate his rofessional capacity.

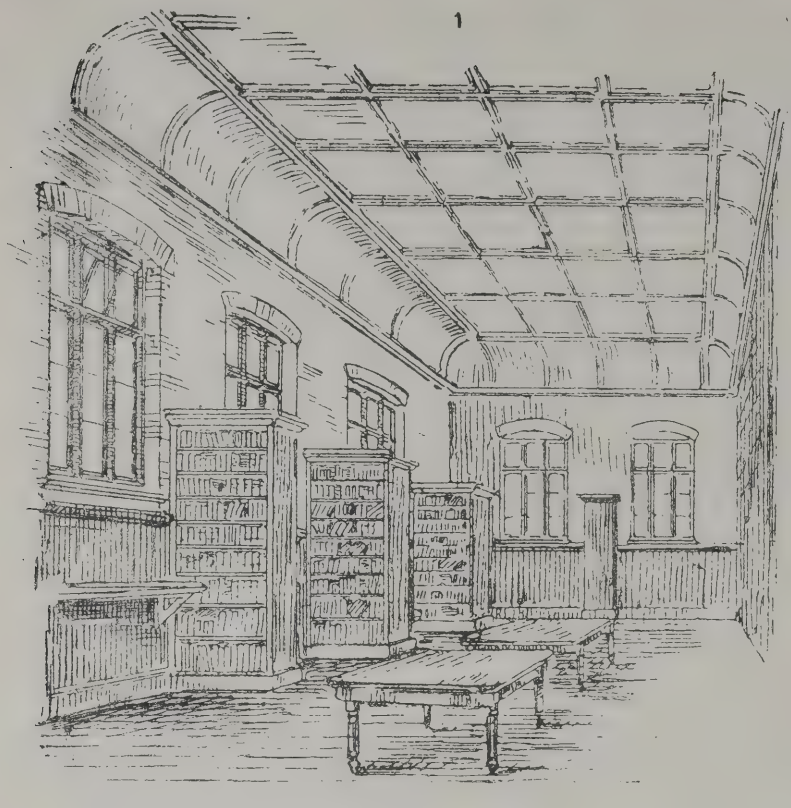
Why should an architect's proficiency be called into question before he has fairly put his scheme into operation? is the natural nterrogation everybody would use. It seems carcely just to doubt the efficiency of a lesign upon the scant grounds the defendants ut forward. They refused to adopt their rchitect's advice, despite his assurance that f the buildings were erected in accordance vith his plans no legal claims could be made. Upon what grounds they alleged the incom-etence of their architect we are not told, nd we may presume that they thought it was unnecessary to incur further expense, or that, having seen the plans, they could dispense with his assistance. They, at any rate, carried out the buildings very nearly on the lines proposed. Architects' labours are often exposed to this treatment at the hands of employers who only desire to get an idea, and have no intention of employing professional assistance. The decision we have mentioned is a timely warning to those who imagine they can dismiss an architect on insufficient grounds.

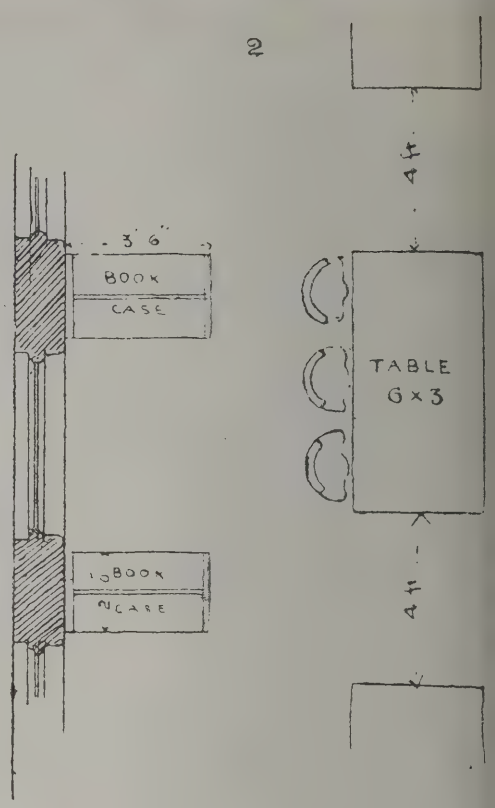
Apart from the legal aspect, the case has interest. It shows what an architect has now to perform to carry out an engagement in London or in any large town; how many claims from interested parties have to be met, either by skilful evasion of their rights or by adroit management in the preliminary stage. The buildings erected in Copthall-avenue on opposite sides of that new street were apparently so situated as to lead to several claims being made. Adjoining owners made objections to the new buildings as to height. The Bridge House Trustees, who were freeholders of houses facing the new premises, argued that the new buildings would obstruct their light and air, and the City authorities threatened to restrain the defendants by injunction if they exceeded in height the premises which had formerly stood on the site. The tenants and occupants of adjoining premises also objected and made claims. The circumstances are not at all unusual: very few buildings of any height and importance can be erected in any part of the City that are exempt from such claims, many of them put forward with no other object but to extort compensation; others for the sake of claiming an imaginary right of light to certain windows that had acquired that light by the removal of the old building which occupied the site of the intended new structure, but which windows were always badly lighted; and other objections raised by litigious neighbours, who try to make the building owner as uncomfortable as they can, though they have no valid ground for a claim. The first-named class of claimants have generally some ghost of a case, or it may be, have a good claim for compensation. The new building obscures the light coming over some previous low erection at the back, by being built out to a greater depth. Generally the back premises of the said previous building were low, and there was a prescriptive right of light over them as servient tenement. When rebuilt to a greater height, their owner is certainly liable for compensation. Again, the owner of dominant tenement who pulls down and rebuilds, is bound to place the windows of the new building in the same positions as those of the old. If he alters them, he loses his rights. A more vexatious class of claimants adjoining a new building, whose windows received only partial light, may make a claim to establish a larger right than they originally possessed. The new building may not obstruct the light more than the old one did, but advantage is taken of the pulling down, and a claim for abandonment is set up. These are instances of the disputes very commonly met with during the erection of new premises, and prove the importance to architects of making careful and measured plans and elevations of the old premises, before they are demolished, indicating the position of the old windows, and in the case of alleged abandonment it is necessary that the person who claims the right should show the abandonment is only temporary. It is a question of evidence. Before the old building with ancient lights is pulled down, a correct elevation of the same should be made, which can be placed in evidence. A better plan is to erect a temporary wooden hoarding, showing the position of the ancient lights, thereby precluding any question as to their number and situation.

Other questions that arise in the rebuilding of old premises may seriously delay the progress of the work. An adjoining owner may complain of the settlement of his party-wall by the underpinning of the basement walls required in making a deeper cellar, and may claim damages from the building owner, or the party-walls may be seriously shaken, or damaged in rebuilding. The building owner is, of course, responsible, even if he has intrusted the work to the hands of a competent contractor; if he employs an architect, the responsibility is assumed to be taken by the latter. The necessity of underpinning party-walls, and of rebuilding them, is a considerable source of anxiety to the architect, and entails upon him the desirability of making the contract so complete that any damages through carelessness should be made good at the expense of the contractor. Even a very considerable acquaintance with the Party Structures Clauses of the Building Act will not prevent adjoining owners giving the architect great trouble in their dealing with them. We have often heard of vexatious owners making demands of an unreasonable kind, raising objections to the pulling down a party-wall that is not of sufficient thickness or is out of repair and defective. Under the 84th section the adjoining owner can make sundry requisitions, which it is the duty of the building owner to comply with, and though differences that arise between them can be determined by arbitration, the process is often vexatious, and much delay is caused. In the rebuilding of party-walls very great care is necessary, in seeing that the rules of the Act are carried out—requiring no small amount of vigilance on the part of the architect. But it is more with reference to the preparation of plans and the careful study of the rights of owners, municipal regulations, and by-laws relating to buildings that we now speak. The complex web of legislation, made up of various statutes, amendments, and by-laws, is sufficiently bewildering to tax the mind of any architect. He is hedged round not only with the statutory provisions of party-walls and structures, the rules of the Metropolis Management and Building Acts, Amendment Acts of 1878 and 1882 with reference to projections, lines of frontage, space in the rear of dwellings, but sanitary by-laws, easements of support, and light and air. These rights and duties, as they affect neighbours in front, at the side, and in the rear, make it imperative that he should study carefully the boundary walls of his design before he ventures to complete the internal arrangements. Frontage, party-walls, and back premises have to be planned in reference to sections of the Building Act; windows which have rights of light over the old premises must be taken into account; whilst other minor orders of local authorities have to be met.

BUILDING OPERATIONS.

THE building trades generally suffer a deadlock at this season of the year; building operations are suspended by frost, and a large number of tradesmen are thrown out of work. This is not invariably the rule. Many contractors who are in a hurry to complete their contracts are not very solicitous about their buildings, and we occasionally find bricklaying and plastering carried on under very undesirable conditions. We cannot have any doubt about the results. Half the buildings which show signs of incipient decay, defective brickwork, and rotten walls have been finished in wet or frosty weather. Take, for example, brickwork. How much of it is carried up in damp and frosty weather? The danger is, of course, that the wall is not sufficiently dry before the frost sets in. Architects pay little attention to these circumstances, and there is seldom any provision in the specification about suspending the work





during the winter months. The contractor is, of course, generally the responsible individual, for if any wall shows signs of damage by frost he has to make it good. How much of it is remedied is the point that chiefly concerns the architect and owner. A little re-pointing on the outside may cover serious defects in the body of the wall which are never found out till the rain tries it, or a second frost comes. The only safe-guard is to specify that no brickwork is to be carried up during wet weather in the winter season; or, at least, that the contractor will be held responsible for any damage resulting from the frost. Good builders who have a reputation to lose, adopt the plan of covering the walls with straw and weather-boards during an inclement season, and never to leave the work for the night till this has been done. But we know that very few bricklayers attend to the matter, and simply cover up the injured work when they resume operations. Some time ago a correspondence took place in these columns respecting the carrying on of brickwork in frosty weather, and many useful suggestions were made. It is asserted that frost will have no injurious effect on mortar if it is mixed with linseed oil and alum, used hot, the proportions being one pint of linseed oil containing one pound of alum, mixed with one bushel of unslaked lime to three of sharp sand. Others assert that sugar mixed with lime mortar in the proportion of 1lb. of ordinary common sugar to a cubic foot of mortar, the sugar being mixed with water and applied in a liquid state, will set quickly and prevent the action of freezing. Some time ago we gave the gist of a report describing the carrying on of bricklayers' work in Norway during frosty weather, which the Consul General of Christiania, M. T. Michell, described. In that country extensive building operations are carried on during frosty weather, the whole secret of the process being the use of unslaked lime. The mortar is prepared in small quantities as wanted, and the unslaked lime is increased as the thermometer falls. The theory is that the mortar sets before it cools, for, of course, the quicker the mortar sets the less risk is there of damage by freezing. To use the bricks dry with unslaked lime or linseed-oil and alum applied hot is worth attention by those who have contracts to complete in the winter months. But brickwork carried up during frosty weather may be rendered sound by using Portland cement, with good sand or aggregates. Selenitic mortar has been found also to be superior to ordinary mortar in resisting frost, and many large buildings have been carried out during the winter by its use. These precautionary methods of resisting the effects of frost are, however, confined to a few buildings. The ordinary contractor will not take the trouble to use any other materials than those he has on hand. But even rain spoils brickwork if it is heavy, and therefore the importance of covering the walls by weather hoarding during rainy weather, especially to prevent the rain from running down the face of wall and discolouring it.

The plasterers' trade is one that is also impeded by damp or frosty weather, and much of the bad work one sees is due to undue speed in finishing before the coats are dry enough. Modern builders are, however, better off than their predecessors: they have many appliances and methods of finishing walls, improved plaster that can be applied in one or more coats, and painted over within a few hours, tiles or slabs of plaster which can be nailed or screwed on the walls ready finished. The common "three coat" plastering has its disadvantages, especially during the winter months. The coats are long in drying, the walls are often saturated with moisture. "Render set" and "render float and set" work to brick walls cannot be successful when undertaken in a wet season, and these are operations which for certain contract reasons are generally hurried or are undertaken in the worst season. For insuring sound and dry work, the appliances introduced into builders' plant have to some extent rendered the trade independent of weather influences. Now we find buildings carried on in London during the night by the aid of artificial illuminants, and the electric light is used with great advantage. By these means the operations of brickwork and plastering can be expedited. Means of drying-out walls by apparatus specially prepared are in use, yet the ordinary builder is willing to run the risks of failure rather than avail himself of them. The specification is often silent on thes points, and much of the mischief of hurrie work is attributable to the desire to obta low tenders.

FREE PUBLIC LIBRARIES.—VIII.

IN the plan and construction of referenc libraries and reading rooms, the ski of the library architect is chiefly eviden It is easy enough to plan rooms that wi serve these purposes, but much mo difficult to give them the form, the pr portion, the furniture, lighting, and warmin that are appropriate to their requirement and which ought to distinguish them fro other rooms. The architect should en deavour to find out, as he should in ever other case, what are the desiderata and th differentia of a reference library. To dra out four walls in the form of a rectangl and to place windows in one or both alterna sides, and arrange bookcases and readin tables, is not to design a room that shall b suited to readers and students who ma spend several hours in it every day, whic should be retired from a main thoroughfa if possible, quiet, well lighted, and com fortable for study. We have laid it dow as an axiom of planning that the mod of lighting is the determining factor i arranging the bookcases and reading-tables but the architect is often free to dispose h windows, or to adopt top lights. Suppos we imagine a small reference or reading room, say 40ft. in length and 22ft. in width that can be lighted on one or both sides, an at one end. As 5 × 8 = 40, we can divid the length into five bays by four standar bookcases projecting from the wall formin alcoves, the distance between centres of th bookcases being 8ft. If we allow each cas to be 3ft. 6in. or 4ft. projection from th wall, and 2ft. wide, allowing a double back to-back row of books, this will allow a alcove of about 6ft. wide, within which th window can be placed. Thus there will b five windows with bookcases between, fairly good arrangement, that will abou compensate, as far as book accommoda tion goes, for the want of a continuou or rack arrangement along the wal By this disposal of the cases we de

termine the width of window bay. Three or four bays, or alcoves, would be less economical of space, for there would be a greater length of walling between the bookcases, and the architect would obtain more book-room by the other system of shelving, known as the "rack" system. Therefore, when only three or four windows can be obtained along the side wall, the architect must make his bookcases project further into the room to compensate for the loss of space, and consequently the room must be wider, to allow of the two rows of alcoves and a row of tables down the middle of room. The other alternative he has is to give up windows—adopt top lights and the rack system of shelving. For narrow reference-rooms, of course, the latter plan is the one that is most economical. Having thus decided how the room is to be broken up in its length, and the number and width of side windows obtained, it will be our duty to consider the width of room. A width of 22ft. is small for a double row of projecting cases. Taking their projection at 3ft. 6in. on each side, we get 7ft., to which we must add the width of the tables, arranged lengthwise, for economy sake, down the centre. Allowing 3ft. in width, which is a convenient width for a row of readers seated on each side, we have 7ft. + 3ft. = 10ft., which allows 12ft. for two 6ft. passages—a fair allowance for public traffic. The tables may each be 8ft. long, and allowing for a space at each end of the room, about three tables of this length can be placed, allowing an interval between the tables of 4ft. We have indicated such an arrangement of room in our sketch, plan 2, the appearance of the cases being shown also. It is not necessary that there should be windows on both sides; five side windows 4ft. or 5ft. high, and proportionately wide, would give ample light, with the end windows; and a blank wall on the other side is preferable for comfort, as the bookcases can be placed nearer together or along the wall flatwise. The reading or news room may be on the other side of such a wall, and of the same size as the reference library, a plan adopted at Norwood and Chelsea.

The alcove and rack system can be combined in large rooms by placing shelves along the wall between the projecting cases and under the windows—a plan that is followed at Wigan and other libraries. When the size of room and mode of lighting are both optional, the architect is free to design a room to suit the requirements of the building. He may take as a controlling factor the accommodation of books to be provided for, and the arrangement of the furniture. A top light allows of the bookshelves being placed on the rack system against the walls, or projecting on the alcove plan, already described, whichever is preferred for effect. Two other systems of placing the bookcases may be mentioned. One of these is to place the projecting cases closer together, forming a semi-alcove plan, dividing the alcove into two by a parallel case, and allowing 2ft. or 3ft. space between. The other is to arrange the cases in parallel stacks across the room, allowing a similar space between them—a plan adopted in lending libraries and in some reference libraries, as at Clerkenwell and Chelsea; but this latter system takes up more area, and is not so well suited for students. A large proportion of the floor-space of a reference room must be given up to the tables, and the middle of the room is best adapted for them. At Clerkenwell the tables are transversely arranged in parallel rows projecting from the window side, and allowing a passageway at the other side of room, a plan that economises space, but is less convenient than shorter tables to afford sitting room for eight or ten readers. In the public library at Reading, a plan of which we have given, the reading-room has twelve tables, some of which are in the form of desks for writing. These last are necessary in the reference library. Fewer tables are required in this room than in the reading-room, and we may cite the Wigan reference library as an example of the alcove arrangement in two tiers, the upper one forming a gallery over the lower alcoves.

A good reading-room should be quiet, well lighted and warmed, and comfortably furnished. The tables should not be too closely packed, be arranged transversely or longitudinally according to the proportion of the room; the books should be stored, if necessary, on wall racks or standards projecting from the wall, but these may not be so numerous or large as those in a reference library. In short, a reading-room should have ample space for traffic and movement round the tables, a condition that points to the desirability of making it less a store room for books than a comfortable room for reading. Indeed, in many of the libraries the general reading-room is without bookcases and is in immediate connection with the news room. One great advantage is gained by stacking the books in other rooms — namely, that there is more breathing room and less dust, sanitary reasons of much value. The tables should not be too large, as most readers like retirement, and object to be gazed at by others sitting at the same table. When placed in rows transversely, they may be arranged so that their ends are opposite to or between the windows, the latter position is preferable. A wide centre passage may divide the two opposite rows. When there are no side windows, and the room is lighted by a sky-light or lantern, the grouping of the tables would be more judicious if they were disposed in the middle, and with the passage-way round the walls.

A clever scheme for a town library of several stories is illustrated by the drawings of the Edinburgh Public Library, which we give this week. The design, as we have before noticed, is by Mr. Washington Browne, and is formed by a central square hall with four recesses, making a cruciform structure, the detailed plans of which we hope to give in our next article.

SUGGESTIVE POINTS OF CONTACT BETWEEN ARCHITECTURE AND PAINTING.*

IN his introductory remarks, the author referred to a paper he read on a similar subject last year, and reported in the BUILDING NEWS on Dec. 13, 1889 (p. 794, Vol. LVII.). In that paper Mr. Rimington endeavoured to show that the principles of composition in painting were derived in the first instance from nature herself, and that whether they were re-distilled from the practice of the old masters, or from that of the modern schools, their parentage was still clearly discernible, and that they were not mere arbitrary inventions of particular painters or academic cliques. He also urged that when their character and their use in the art of painting were rightly understood, and they were looked upon as helps and not masters, they did not fetter its methods of expression, clip its wings, or destroy its individuality. That, on the contrary, though they could not create an artistic genius, any more than a knowledge of counterpoint could create a musician, yet that they were of the greatest assistance to the painter, might help him out of many difficulties, assist him to discover defects in his own work, and enable him to take a more intelligent interest in that of others. There is, the lecturer continued, a school which prides itself upon discarding all the teachings of precedent in art, and which goes further and denies the existence of any such things as principles of composition, or indeed of principles of any kind. Its views have a certain plausibility, chiefly because there are a certain number of good painters who profess to hold them; but as a matter of fact the practice of these latter is in direct contradiction to their theory, and both from their works and their studio-axioms it would be easy to deduce, not merely a set of principles of composition, but a very narrow set, any infringement of which receives scathing criticism at their hands. These principles do, therefore, unquestionably exist, and their more or less general acceptance by painters is right and expedient. There will always be those who cavil at any method, and take fright at anything they suppose is an academic rule. Understood in the right sense, however, these large, broad principles can almost always be traced in the best work in painting, to whatever school it belongs. Our object now is to see how far a few more of them may be applicable to the sister art of architecture. The first subject I propose to touch upon is that of tone. A picture may possess many good qualities, but if it is wanting in tone, it may still be crude and untruthful, and vulgar in effect. In what then does tone consist? Tone, says a French artist of repute, is the greater or less intensity of a tint. As far as this goes it is quite a true definition. But by "tone" is meant, not only truth of tone, but also harmony of tone. Truth of tone in painting may be defined as the accurate reproduction, so far as pigments will allow it, of the relative light and shade values of an object. Harmony of tone is to a picture, as regards light and shade, what harmony of colour is to it as regards colour. Harmony of tone, however, is difficult to described, at least in the broader sense of the term, where, as in a musical composition, a note or two of strong contrast, or even discord, is not excluded. This being so, it is also not easy to say exactly why a given picture lacks this harmony, or, in other words, is out of tone; but still there are some general facts and principles with regard to tone which, as they are of service to the artist, may possibly also be so to the architect. For tone can, or ought to be taken into account in architectural designs. The neglect of the subject is one of the great causes of failure in many architectural works, and especially in interiors, sometimes perhaps because the architect is so entirely wrapped up in the archæological, ecclesiological, or utilitarian interests of his building. The appreciation of tone is best cultivated, and its enormous importance in giving impressiveness of effect best realised, by studying it in nature. But to benefit to the full extent by doing so, it is necessary to have first studied it in the works of the great masters. Great art is almost always characterised by its beauty of tone, and two pictures of the same subject, by a good and a bad artist respectively, differ quite as much from each other in point of the truthful and subtle rendering of harmonies of tone as in anything else. Let us endeavour, as far as we can, to discover some of the conditions upon which this harmony of tone existence depends. Taking some landscape subject—for example, a group of trees backed by a low line of hills—let us observe it when it is under harmonious effect of tone. We shall find that when it is most so—which will probably be in the early morning or late evening—as compared with when it is least so, the most important fact is that the details of leaf and branch in the tree; ridge and hollow, and distant marking on the hill, are least mapped out and individually defined. In a word, it is when the little patches and lines of light and shade which make visible the leaves and twigs, or the mounds and furrows, are least widely separated from each other and least in sharp and harsh contrast. Breadth and harmony of tone is, in fact, reached by a certain approximation of these little lines and patches to each other, and when, instead of fighting for supremacy, they sink their differences and unite in making the group of trees stand out as a harmonious mass of foliage and stem against the reposeful spaces of the distance and the sky. In this particular case tone harmony is obtained by decrease in the strength of some of the lights, the darks remaining tolerably constant. But the process may be reversed, and it may also be produced by lessening the strength of the darks, and bringing them nearer in value to the lights, as in the case of a mountain side, which, perhaps, under ordinary conditions of lighting, is cut up by innumerable scars, dents, and fissures; but which, when seen under the full glow of evening sunlight and an opalescent atmosphere, though its details are not lost, tells as a broad space of pale, delicate tone against the deep blue sky behind it. We may draw the conclusion that one of the essentials to harmony

* A paper read before the Society of Architects, Dec. 9, 1890, by A. Wallace Rimington, R.P.E.Assoc.S.A. See p. 840, *post*.

of tone in a picture or an architectural work is that there shall be large spaces in which the light and shade differences of the details shall not be very great. This is not saying that they should disappear, but merely that they are sunk into tone, rendered less obtrusive, and made subordinate to the larger forms of which a picture is composed. Harmony of tone in painting is so essentially, and by universal consent, connected with dignity and reposeful grandeur of effect, that where these qualities are aimed at by the architect he might do well to take the question of tone carefully into consideration. How frequently is the impressiveness of a church interior destroyed by the introduction of features or objects which cut into what to the artist would have been a beautiful and impressive tone harmony. A glaring and many-coloured reredos, a series of white marble slabs, the glitter of a piece of Birmingham brass-work, the needless insertion of a window, the reflected glare of encaustic tiles, often does this most completely. I may instance the disastrous effect upon the exterior of Coutances Cathedral, some years ago, by the introduction of new white sculptures in the dark-toned niches. Also of the reduced impressiveness of the choir of Westminster Abbey, owing to the figures in the modern reredos screen telling as white spots and breaking up its quietude of tone. A yet more striking example might also be drawn from Westminster in the case of the white marble memorials in the aisles and transepts, which injure it much more by their destruction of breadth of tone than by their incongruity of style. No one would, however, wish to see these abolished; for the value of their historical interest and associations far exceeds that of the artistic qualities of the building. So, too, in the exterior of a building; materials strongly opposed both in tone and colour, Bath stone and brick, for instance, light grey marble and dark red granite, are sometimes forced into an alliance they mutually detest, with destructive effects to the unity of tone of a building. I am far from asserting that harmony of tone is invariably a necessity in all parts of a building, or in all descriptions of buildings, or that many architects do not appreciate it. But in some cases, if the architect had been more conversant with the painter's axioms, and had appreciated their general truth, instead of destroying harmony of tone, he would have felt its imperative need, and have striven diligently to obtain it. It seems probable that the great Mediæval men, and possibly also the Early Classic architects, realised instinctively its importance. It is difficult to enter such churches as that of St. Francis at Assisi, our own magnificent Westminster, with its impressive tone silences, St. Mark's at Venice, the Pantheon at Rome, or the cathedrals of Milan, Canterbury, or Vienna, without feeling how important a part great harmonies of tone play in their impressiveness of effect. The exterior of St. Mark's, compared by Mr. Ruskin to an exquisite wreath of sea-foam, might be quoted as an instance of tone harmony in a light key, as contrasted with a dark one. So also such buildings as the Taj-Mahal and other pale-toned marble temples of India, or Giotto's Campanile in Florence. Much of the poetry and impressiveness of old buildings depends, at any rate in the eyes of the artist, upon their possession of this quality. It is partly on this account that bad restoration, by introducing greater differences of local tint, and placing light-toned objects against dark ones, does so much to destroy these qualities. A fact which may be observed in nature and in painting is that, given any space of tone, it will be rendered more subtle by objects darker than itself coming against it, or forming a part of it; more forcible but less subtle by the contrast of surrounding spaces or impinging objects lighter than itself. This fact may possibly be of use to the architect. Strong contrasts, though most valuable, are dangerously keen-edged tools, and require careful use. Possibly because this is felt they are very sparingly used in some pictures, and these works naturally fall into a particular key of tone—light, dark, or intermediate, as the case may be. Amongst a large school at the present time a very light key is in fashion, and if we except Fra Angelico, Botticelli, and a few others, the old masters mostly adopted a darker one. Whether the moderns or the old masters are right, this much is tolerably certain—namely, that a picture which includes too varied a range of separate tones is almost as unpleasant as one in which the artist has struck too many notes on the colour scale, and produced something suggestive of the kaleidoscope. The simpler the range the easier the treatment, and as in colour only an Oriental decorative designer, a Turner, or a Burne Jones can deal with a great complexity of colours, so only an artist who has an exceptional genius for black and white can deal with a great variety of tones. Perhaps this may serve to point out the path of safety for those of us, both painters and architects, who do not feel quite sure that we are great geniuses. May I submit that it would probably be advisable, under ordinary circumstances, for the architect, like the painter, to aim at simplicity, breadth, and subtlety of tone rather than at variety, and when he has a quiet space of half-dark in his interiors, to deepen and broaden it with any ornamentation he may use, only sparingly allowing himself the pleasure of bringing down some sharp light upon it. So, too, with spaces of pale tone when force and contrast are not essentially necessary. Finally, the careful examination of any good collection of pictures, with reference to some of the points to which I have referred, would suggest others, and would sharpen and render more sensitive the appreciation of tone. I now turn to a principle closely connected with tone, but so well known in art that it seems almost needless for me to refer to it. It is that of breadth. But though often spoken of, it is doubtful whether its importance is sufficiently realised; and as to the comprehension of it, if one may judge by many of the pictures to be seen in modern exhibitions, and many of the architectural buildings seen in modern streets, it is too often considered to mean vacancy. Perhaps breadth may best be defined by describing its antithesis, which is littleness—a crowding of detail and a display of fluttering lights and scattered forms, that confuse the eye and tire the mind. To give breadth to a picture is to get rid of this unpleasant quality, not necessarily to destroy detail, but to mass its subject in broad divisions of light and shade or of colour—to sink the prominence of some parts and to emphasise that of others. The need for breadth is probably as much an intellectual one as a visual, and might be traced in other subjects besides that of art. Nature continually shows the painter how it may be obtained, and when, for example, he is seated before a great rolling tract of country dotted with woods, farmhouses, and villages, bewildering to him in its complexity and apparently unpaintable, she quietly sweeps a great cloud across the centre of his subject, divides it into large and telling masses of light and shade, and gives him the means of expressing its beauty upon his canvas. Or, to take another example, how different in appearance is a crowded street of some Continental town under mid-day or grey-day glare, and the same street in delicious breadth of effect when the cool shadows of its gables are thrown diagonally across it, and the sunlight on the opposite windows and roofs is made the broader and more valuable. This principle applies not only to light and shade, but also to colour and grouping of detail. Its application to architecture is tolerably obvious, and more or less generally recognised. A building is often condemned by general consent on the ground of its effect being frittered away by a superfluity of detail. Yet in most cases the destruction of the impressiveness of a building is not nearly so much due to a superabundance of ornament, as to that ornament not having been properly massed and concentrated into large groupings, and the artistic principle of breadth not having been sufficiently considered. One of the peculiarities of the best French Mediæval work is the exquisite adjustment of the decorative features to the plain wall-spaces, as, for instance, in the façade at Bourges, or the way in which the details are built up into large forms, and a sense of breadth arrived at. It was chiefly in the decadent periods that the great intuitive principle of breadth and the division of the feature of a building into large masses was lost sight of. The grandeur and impressiveness of the interior of a great Norman abbey or Romanesque cathedral, such as those of Durham, the Abbaye aux Hommes at Caen, or St. Gervais at Falaise, is largely due to the breadth of effect of its cavernous arches, solid archivolts, and simple wall-spaces. That the intellectual demand for this quality in a building is a very deep-seated one is obvious from the widespread and reasonable admiration for the severest forms of Greek architecture, and in the almost equally widespread and unreasonable praise of some of the ugliest structures of the Middle Renaissance period, such, for instance, as the Pitti Palace in Florence. Breadth is so essential a quality, that many minds demand it at any cost. With regard to breadth of colour, it is clear that, as in a picture, the fewer and larger the spaces or the surfaces of colour in a building the broader will be the effect; and if the building is rich in detail, these large and separate colour-spaces will be useful in binding it together. Of course, breadth may be carried so far as to become monotonous; but as a rule in painting, as perhaps in architecture, the fault is on the other side. In referring to large separate spaces of colour, I mean the resultant or general colour, though this may well be built up of a number of smaller patches, as in a wall of delicately variegated marble, in which many colours are present, but of which the resultant tint is an opaline grey. An instance of the value of the application of the principle in colour is the broad yet subtle colour divisions of the Palazzo Public of Piacenza, which are peculiarly delightful in their avoidance of monotony and their gift of breadth. The success of many of the modern buildings of several well-known English architects is also mainly due to their comprehension of the necessity for breadth of colour effect.

(*To be continued.*)

INSTITUTION OF CIVIL ENGINEERS OF IRELAND.

SANITARY PROGRESS IN DUBLIN.

THE inaugural meeting of this institution was held in Dublin on the 3rd inst., when an address was delivered by Mr. Spencer Harty, M.Inst.C.E., the president, who took as his subject, "The Sanitary Works which are now in progress in Dublin." Of these, the President observed, one of the most important is the housing of the working classes. Much of Dublin was built at a time when sanitary knowledge did not exist, or was despised, and a very large portion, especially in the older districts, is now in an utterly ruinous and decayed state, and requires rebuilding. Among the admitted evils of the system under which the working classes are at present housed is the single-room system for in Dublin nearly one half of the population inhabit single rooms. Out of 54,000 families 32,000 reside in 7,200 houses, and occupy an average of 1·5 rooms per family. One of the chief causes of this state of things is that the artisan and labouring population of Dublin is abnormally large, and forms an exceptionally high percentage of the population as compared with other towns. Two sites have been cleared under the Artisans' Dwellings Acts in Dublin, one of these, the Coombe area, being the first area so cleared in Ireland by a local authority. The cost of clearance and new buildings amounted to £51,967. Since then Plunkett-street area has been cleared and built upon at a total cost to the ratepayers of nearly £30,000. The two areas cost, respectively, £24 7s. 9d., and £18 11s. 8d. per head. Another so frightfully insanitary area could not now be discovered in Dublin as Plunkett-street; yet there are some districts bad enough, and especially isolated cases of houses in a most wretched state, occupied by the poorer class. The Dublin Artisans' Dwellings Company and more lately still the Dublin Working Man's Suburban Dwellings Company, have since done good work in remedying this state of things, but very much yet remains to be done, for which ample powers are given in the Housing of the Working Classes Act passed this year. Great improvements have been made in the sewers of the city in recent years. Till in the recent years they were square-built dry-masonry channels with the natural earth for a bed, and flag stones for a top cover; but now the egg-shaped brick sewers are adopted, and manholes provided at frequent intervals. Fifteen years ago ventilators on the public sewers in Dublin were not known; now they were placed at an average distance of 100 yards apart. The ventilators as now designed are of the crudest description, and not worthy of the present generation. The only thing that can be said in their favour is "of the greater of two evils choose the least." Sewers in Dublin have for many years back been made with a sufficient gradient, so that they should be self-cleansing, yet in many instances they are not so, and this may be attributed to the large diameter of the

house drain, which in no instance is less than 9in., and through which foreign matters are sent with the greatest contentment on the part of the delinquent. In many cases the water-closet has been used as the common ashpit of the house, to carry away the refuse from which the main sewer must do duty. Cases have also been discovered in which the 3ft. 3in. egg-shaped brick sewers running through streets of rather quick declivity have been completely choked by road detritus and surface matter, swept in through gully grates and yard drains; and a certain proportion of the annual outlay in connection with sewers is for cleansing purposes. Proper house drains are now constructed with perfectly glazed pipes of a certain diameter; but the main sewer is built with rough bricks and rough mortar joints, which catch and retain the solids in the sewage passing through, and which remain and decompose there. All main sewers should be built up to top water level with the best glazed bricks and pure cement joints, smooth pointed and flush, manholes and ventilators being placed nearer to each other than at present, and sewers constantly flushed by means of manual labour. Automatic flushing is not quick enough, neither has it the force, nor can it act on the sides of the sewer in the same way as water discharged under pressure through a jet or hand-pipe; nor is it always reliable. Sewers and sewage treated in this way would be, of course, expensive; but a question of expense ought to be a minor matter in comparison with health. Dublin and Glasgow rank amongst the worst cities in the United Kingdom with regard to the outfall of their sewers—in each case the river which passes through the city forming the outfall, and being, in reality, an open or uncovered main sewer. Things remain in Dublin as they were from the beginning to this day, except that they are very much worse, by reason of water-closets now discharging into public sewers, and which 30 years ago existed only to a very limited extent, and also by reason of former watercourses being turned into public sewers. Turning next to plumbing matters, the President remarked that good and sound plumbing in a house is a most important matter in the interests of public health. The plumber should not only carry out the plumbing work of a house, but should also be the person to put in the drains. Bad plumbing work and bad drainage are imminently connected with enteric fevers and other diseases. Typhoid fever has been a frequent source of trouble in Dublin. He has been called upon, during the past year especially, to have many examinations made in houses, and in not one instance were the drains found perfect—the result being that sewer gas not only could, but did, get into the houses. The examination and registration of plumbers will only go a short way to remedy the evil, inasmuch as the registration is not compulsory; and the ignorant and jerry workman can still run riot in his work, and laugh at your death-rate statistics. A medical man will not be allowed to practise without having a legal qualification; a chemist will not be allowed to compound drugs; but any man who chooses to set up in a business and call himself a sanitary engineer is allowed to enter your house and erect as many death traps as his own sweet will may devise, and there is no remedy. All such men should have a legal qualification and license, and it should be made an indictable offence to carry out plumbing or drainage work in any house without notification to the local authority, who should be compelled to superintend that work and issue a certificate of its accuracy and correctness, and also to test and examine for defects every house in the city. At present a medical practitioner notifies cases of contagious disease to the sanitary authority, and similarly any alteration in a work done in a house connected with the sanitary system, and arrangements should also be notified—if such were done, coupled with good and sound dwellings for the poor, the high death rate of Dublin would be very much reduced. Tara-street, now a leading highway from Great Brunswick-street to Butt Bridge and the northern side of the city, was the first street made by the reformed Corporation of Dublin. It cost nearly £20,000, or one-third of a penny in the £, and passes through what was formerly a hotbed of disease and vice—the houses demolished being of the worst class of the tenement house in Dublin. Lord Edward-street, connecting Dame-street and Christchurch-place, cost £69,000. Two other streets have been made by the corporation, one opening up Blackhall-place to Ellis-quay, at a cost of £8,679, the other making a new thoroughfare between Upper Bridge-street and Usher's-quay, at a cost to date of £8,485. In Tara-street the corporation have built baths, wash-house, and laundry. The first-class swimming-bath measures 57ft. long by 33ft. wide, the second-class being 64ft. by 26ft., and are each 5ft. at their deepest, and contain 45,000 gallons and 40,000 gallons of water respectively. There are 12 first-class reclining-baths and 16 second-class, and in addition eight reclining-baths for women. The cost of the buildings was £14,000, and the loss on the working, including interest on loan, is about £900 per annum. The greatest of the sanitary works carried out by the Dublin Corporation has been the Vartry Waterworks, and the foresight of those engaged in it was abundantly proved in the year 1887, the driest year on record since the works were initiated. Formerly Dublin was mainly supplied by pumps and springs, and with water taken from the Dodder river, over which watercourse, by an Act of Parliament passed in 1719, no "house of ease" could be erected within one mile of the city; so that outside this distance a closet could be erected over the course (which would form, undoubtedly, a good water carriage system). Such was the idea of sanitary arrangements even in those comparatively modern days. Wooden water-pipes were laid through portions of the city for the distribution of the water from this source. Several of these wooden pipes had square or oblong holes cut in them for the purpose of a fire hydrant, which were plugged with wood; but to get at them one had to dig down from the street and search for them—meanwhile the house might burn. After this period came the canal supplies of water and iron pipes, which formed a very much more extended system; but still a large portion of Dublin could not be, and was not, supplied with water, and what was supplied was on the intermittent system. Now, an unlimited supply of water is given from the Vartry system, not only to the City of Dublin, but to a district extending from Artane on the north side of Dublin to about a mile below Bray on the south side, and from Dundrum, Wilbrook, and Rathfarnham on the west to the sea coast on the east, comprising roughly an area of about twenty-two square miles. The rain basin, or catchment area of the river from which the Roundwood Reservoir is supplied is 14,080 acres. Taking the population of Dublin and the townships and adjoining districts supplied with water as 340,000, the average consumption per day and per head since 1879, when the Vartry system was introduced, has varied from 42 to 44¾ gallons, including public services and trade supplies. In Dublin city the death-rate for 1887, when the quantity supplied was lowest, was 33·2—the highest since 1880, and much higher than it has been since. This may have arisen from want of sufficient water being had to flush sewers and drains. The rate of 1s. in the £ on the Government valuation has hitherto been paid for this great boon of pure water for domestic purposes (not including public rate); it is expected for 1891 it will be 4d. in the £ for the same supply, owing to the consolidation of the corporation stock. The annual cost of the production and supply of water to the citizens is about 2½d. (or a fraction over) per 1,000 gallons. In connection with this water supply the corporation has a most efficient, though small, fire brigade, consisting of one superintendent, one lieutenant, one inspector, and 38 men, and for whom a principal station has been built at Clarendon-row. The cost of the brigade for next year is estimated at £4,300. Proceeding next to describe the paving of the city, the President explained that when the present corporation came into existence the macadamised streets were laid down, and the old paved streets broken up, and later on macadam streets on a pitched foundation of from 9 to 12in. deep. Next came paving with Welsh setts with wide joints of from 2in. to 3in. wide. Then came paving (in streets of heavy traffic) on lime concrete foundations, and finally paving with close tarred joints, laid on a bed of cement concrete 6in. thick. Some of the great difficulties in properly maintaining the streets of Dublin arise from the fact of the substrata being dirty clay or mud, and in many instances the soft filling stuff which was formerly used; these, coupled with sunken gas, sewer, or water openings, are difficulties which have to be overcome, and if the streets are to be maintained as they ought, it would take a very much higher improvement rate than a city like Dublin can afford. Some of the old paving with falls to the centre and otherwise with the old bolder and blue paving setts, is still in existence in the back streets and lanes. It was a mistake to turn all the principal streets of Dublin into macadamised streets, as macadam in a city like Dublin with a damp climate, unless formed with good hard stone, and rolled and cleansed, is sure to become a nuisance. For some years back the corporation have been trying to improve these roads, and many of the streets of Dublin to-day will bear comparison with the best streets in England. Great difficulty is experienced in getting well-dressed paving stones; first cost in such matters as these is always cheapest. In carrying out the paving under the present and recent loans at an expenditure of £200,000, the corporation encouraged, as far as possible, the opening of stone quarries in Ireland; and accordingly, in 1879, setts from Dalkey, Newry, Rathdrum, and Ballintoy were tried on various streets; and, more lately, setts from Arklow have been extensively used in the city. The stones from the former quarries were laid only in patches as trials, and were surrounded by Welsh setts. In some instances the wear has not been at all satisfactory, and the stones have been removed. No better stone for macadamising can be got for Dublin than that which comes from Ballinascorney; but the difficulty is in getting quarries opened up, and to prevent the soft surface stone being supplied. Great strides have also been made with regard to footpaths, and the exception now is to see a gravelled or cobble stone footway. Tar, mineral rock, cement concrete, hygienic concrete, asphalte, ferrumite, compressed crushed granite and cement flags, and granite flagging have all been used in Dublin.

Cement concrete, 3 to 1, costs on an average, including excavation and carting away stuff, watching, &c., 3in. thick.....	2s. 6d. per yard.
Hygienic concrete, not now used, but wear has been good, 3in. thick, cost	4s. 6d. ,,
Asphalte, ¾in. thick, laid on 3in. of cement, 6 to 1 concrete, costs.....	5s. 6d. ,,
Ferrumite, the old flagging having been taken up and bed prepared, cost.....	5s. 0d. ,,
Compressed crushed granite and cement flags 2¼in. thick, cost	4s. 2d. per sq. yard.
Do., 2½in., cost	4s. 8d. ,,

And granite flagging, the flags themselves being 3in. thick (delivered, cost 7s. per yard), 11s. to 12s., including work around area grates, coal stoppers, stop-cock. Tar and mineral rock asphalte are not now used.

The hygienic concrete was composed of Portland cement, ground granite, and carbolic acid. The Corporation of Dublin is now proposing to expend £50,000 on an electric-light central station in Fleet-street, from which certain streets will be supplied with public and private lighting. The system proposed is for street or arc lighting, a continuous current with an electromotive force of 2,000 volts, with arc lamps in series (probably the Brockie-Pell pattern). The lights to be of 2,000 nominal candle-power. The private lighting to be supplied from alternating dynamos generating a current of 2,000 volts. Transformers to be suitably fixed to supply houses at a current of about 100 volts. Tenders have been received for this work from the best companies in the United Kingdom, and the amounts are well within the estimates. The corporation has also built a splendid cattle market, containing ten acres, at a cost of £30,000, on the North Circular-road. It is one of the largest in Europe at which markets are weekly held. An abattoir has been constructed at a cost of £15,000. A new fish and vegetable market is also in course of erection on the north side of the city, at Mary's-lane. A covered-in market, containing about 60,000sq.ft., will be built, and the adjoining streets are to be materially widened. The corporation has also two public libraries and a technical school. It will be seen, therefore, that the Corporation of Dublin is not, and has not been, idle, as all the works referred to have been carried out during the last thirty years; and yet a great deal remains to be done, if they are to keep pace with the local authorities on the other side of the water.

The will of the late Mr. John Mossman, sculptor, Glasgow, has been proved at £6,743.

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ILLUSTRATIONS.

INTERIOR OF ST. MARY'S CHURCH, PORTSEA.—LIVESEY HALL, LANCASHIRE.—MEMORIAL FONT, HOLY TRINITY CHURCH, WOOLWICH.—NATIONAL SILVER MEDAL DESIGN FOR MARKET HALL.—EDINBURGH PUBLIC LIBRARY.—CHURCH SCHOOLS, HERNE BAY.—ST. JAMES'S CHURCH, GREAT GRIMSBY.

Our Illustrations.

ST. MARY'S CHURCH, PORTSEA.

We publish a double-page interior view of Sir Arthur Blomfield's great church, lately erected at Portsea. It accommodates about 1,400 adults in the nave and aisles. The roof is an open-timber one of exceptionally bold proportions and handsome character. A terracotta dado runs round the interior. Outside the walls are faced with flints on a Portland-cement concrete filling, and inside Bath-stone ashlar is employed. The chancel is groined, and an elaborate wrought-iron screen incloses the stalls, as seen in the view. The morning chapel is on the south side of the choir, and the organ-chamber is located in a transept on the north side. There is a massive tower in the centre of the nave at the west end. Our illustration is from a fine photograph by Messrs. Fry Bros., of Brighton, which was exhibited at the Crystal Palace Photographic Exhibition this year.

LIVESEY HALL.

I am afraid I have not anything further to add to that which accompanied Mr. Harrington's sketch of the same building you published on June 6th last. The present sketch shows the wing built in 1666; it is unoccupied and in a neglected condition, but contains some of the original internal fittings, including an oak staircase.—J. Langham.

MEMORIAL FONT, HOLY TRINITY CHURCH, WOOLWICH, E.

This font, in polished marble, is now in course of execution by Mr. Margetson, of Chelsea (the sculptor who carved the enrichments under the late Mr. Street at the Law Courts), from the designs of Mr. Maurice B. Adams, architect, in memory of the wife of the present vicar, the Rev. J. W. Horsley, M.A. The church is a very large one, erected during the early years of the present century in a sort of Classical style, with galleries at both sides of the building and at the entrance end. The strongly marked horizontal lines of the interior thus secured, in combination with a flat ceiling, seem to render a spire-like form for the font cover very desirable. The several details on the sheet, herewith printed from the working drawings, give full particulars of the composition. A balanced pulley and chain from the roof will carry the cover. The copper dome is intended to be seen when the cover is lifted during the Baptismal service. Handles are provided to pull it down by, as seen in the section. The ordinary plug and chain will not be used in the marble bowl, but instead a raised sort of circular rose, cut out of the solid, is contrived with four small holes in the rim, through which the water will draw away. A cock, governed by a long arm, is worked by a handle in the pedestal, as indicated.

DESIGN FOR MARKET HALL.

This design received the Silver Medal awarded in the National Competition. Mr. Frank Shayler is the author.

EDINBURGH PUBLIC LIBRARY.

The sketches of this building, which we illustrate to-day, are from the pencil of the architect, Mr. G. Washington Browne, prepared after the working drawings were matured, and were hung upon the walls of the Royal Scottish Academy Exhibition in the spring of the year. Our readers may recollect that this design was selected on the award of Mr. Alfred Waterhouse, R.A., from among upwards of thirty others submitted in competition by Edinburgh architects, and while the details of the building have been carefully studied and improved upon, the design remains in all its essential features as originally submitted. The site upon which it has been erected is a peculiar one, in respect that the two streets which form the east and south boundaries are at different levels, and, as its name implies, George IV. Bridge crosses the Cowgate at a height of 48ft. above the level of that street. The adjoining buildings to the north are of great height, and the difficulty had to be overcome of covering up the rough mutual gable, and at the same time leaving an area for access and light next the bridge. This has been successfully done by projecting the principal staircase forward to the building line of the adjoining tenement, while keeping the main part of the building 15ft. back from the parapet of the bridge. The *motif* of the design of this building is to secure abundance of light equally upon all four sides of the three large rooms—the general reading-room, the lending library, and the reference library. This has been attained by the adoption of the cruciform plan. The arms are short in length, and the whole end of each arm is occupied with large windows, so that ample light in every direction is obtained. The four angles which fill up the space between the cross form and the square outline of the site are occupied respectively with the grand staircase to the reference library, the public staircase from the Cowgate to the libraries, the service stair, also from the Cowgate to the libraries on the several floors, staff-rooms, and space for store-rooms to be built in the future when the necessity for further accommodation arises. The principal entrance is on the level of George IV. Bridge, giving access to a columnal vestibule 47ft. by 17ft., the walls of which are finished in polished ashlar, while the floor is laid in squares of polished marble. At one end of the vestibule is placed the stair up to the reference room, and at the other end the stair down to the general reading-room, while in the centre of the vestibule, directly opposite the main entrance, is the doorway of the lending library, placed for easy access upon George IV. Bridge level, with the reference library directly over it, and the general reading room or news-room directly under it. The lending library, 72ft. by 72ft. over the arms, is arranged internally in much the same way as the telling-room of a bank, the work to be performed being pretty similar in both cases. The centre area formed by the intersection of the arms of the cross is given up to the public, and is surrounded by a service counter, upon which are placed the indicators, and over which the books pass between the attendants and the public. The bookshelves are placed principally at right angles to the windows for good lighting, and are restricted to a height of 7ft. 6in. to top of cornice, so that every book can be reached without the aid of steps or ladders, and are within a yard or two of the attendant's place at the counter. The shelving affords accommodation for 48,000 volumes, which can be materially increased by the erection of the book stores, for which space has been left. On an entresol over the vestibule, and halfway up the grand staircase, is the board-room, 26ft. by 17ft. 6in., with strong room and lavatories attached. At the top of the grand staircase the reference room is entered. This is 90ft. by 72ft. over the arms, and is arranged internally upon the same principle as the lending library. The books are placed upon shelves in alcoves formed between the pillars and piers of the projecting arms, while the centre portion, represented by the intersection of the arms, is occupied by general readers. Each alcove is also provided with a table and chairs for the accommodation of readers who are engaged upon the special study of any subject requiring several books at once for cross-reference. The shelving in this room extends from floor to ceiling in three tiers each, 7ft. 6in. high, so that all books can be reached without ladders, and four spiral staircases inclosed within the responds of the arcade give access to the upper tiers. Only two tiers of shelving have been fitted up at present; but when the third tier is added and the adjoining book-store is erected, accommodation will be found for upwards of 100,000 volumes. Tables and chairs are provided for 146 readers. All the furniture of this room is of American walnut, with which material the bookcases are faced, and we may here mention that the whole of the furniture and fittings throughout the building have been specially designed by the architect. The general reading-room or news-room occupies the first floor below George IV. Bridge level, and is reached both from that street and from the Cowgate by straight flights of steps 6ft. wide, the walls of this staircase being tiled in lighter and darker bands of yellow, from tread to soffit throughout. The news-room corresponds exactly in size with the reference-room, the arms of the cross being fitted with newspaper stands, and the central portion of the floor with tables and chairs for magazine and journal readers. The doorways, fireplaces, column pedestals, skirting, string-courses, &c., in this room are executed in faïence of an ivory tone, with enrichments of yellow upon blue ground. A high dado of specially designed tiles in blue and yellow upon an ivory ground is surmounted by a deep frieze of lustre tiles, containing proverbs from the Book of Solomon. Entering from the news-room, and placed under the grand staircase, is the juveniles' room, 35ft. by 32ft., similarly treated with faïence and tiles, and containing a juvenile lending library of 4,000 volumes. On the remaining two floors, between this and the Cowgate level, are placed workshops and book-store, boilers and machinery for heating, ventilating and electric lighting, houses for engineer and caretaker, public lavatories, &c. The estimated cost of the building and furnishings, exclusive of electric lighting, was £30,000, and this has been most closely adhered to in execution. The stone used for the dressings is from Prudham Quarry, Stirlingshire, and that for rubble from Hailes Quarry, Midlothian. The girders and joists of floors and the principals of roofs are of steel, and concrete floors are used throughout. The steps are from Myreton Quarry, near Dundee. The contracts have been entirely in the hands of Edinburgh firms.

CHURCH SCHOOLS, HERNE BAY.

These schools are about to be erected in connection with the parish church, and will replace the old school buildings, which were constructed when the town was less than half its present size. The new building will be used not only as Sunday schools, but for parochial purposes of all kinds throughout the week. The perspective view from which our illustration is taken, was exhibited at the Royal Academy this year, and is from the design of Mr. Ernest Turner, architect, London.

ST. JAMES'S CHURCH, GREAT GRIMSBY, LINCOLNSHIRE.

The work of repair and reconstruction of St. James's Church, Great Grimsby, has been in hand since 1874. Much has already been accomplished, but a very great deal yet remains to be done before the drawings, prepared for the entire scheme by Mr. Withers, architect, and fully illustrated in the Building News for May 21, 1875. have been carried out. Among the repairs, the central tower occupied an important place. The tower contained a peal of eight bells, substituted for an older peal of six in 1830. These were rung until 1857, when the tower, being certified as unsafe, the bells remained silent until 1886, a period of 29 years. In the latter year the tower was taken in hand, and on removal of the bells and floors and examination of the tower, a serious state of dilapidation was revealed. The tower was honeycombed at the level of sills of belfry windows by insertion of immense beams, and was wholly resting on a few through-stones. The chancel arch was also badly cracked. The work of repair was long and costly. To prevent any of the new belfry timbers going into the upper walls of tower, the architect designed a cradle, which we illustrate to-day. Starting

with the insertion of eight hard York stone corbels, 48 by 17 by 15in., cut and pinned into the haunches of the four arches carrying tower, where the walls are 5ft. thick, a strong floor, for the ringers, was first constructed resting on same, and from thence standing 6in. from walls. Eight uprights, immediately over corbels, 12 by 12 and 16ft. high, were erected to carry floor for bells, the whole being cross-braced and tied together, as shown. On the belfry floor a new oak frame for the bells was placed. Three of the old bells, Nos. 2, 5, 6, which were cracked, were recast, and the whole refitted and rehung by Messrs. Warner and Son, of Cripplegate. The total cost of estimating and repair was £1,300. The bells have now been constantly rung for four years in perfect safety, the cradle answering its purpose in every respect, the various bolts requiring to be occasionally tightened, as they loosen from vibration.

WAYSIDE NOTES.

YOUR readers must have been pleased with Messrs. Leeming and Leeming's letter in the matter of the so-called patented plans. It adds materially to the weight of evidence as to the lack of novelty in these plans. This evidence is surely now strong enough to show clearly that the "invention" has been anticipated on many occasions. The examples instanced by Mr. Fairfax and Messrs. Leeming and Leeming would in themselves be amply sufficient to demonstrate this, even if others were not forthcoming. As a matter of fact, it is only necessary to enter into conversation on this topic with any well-informed architect to hear many buildings put forward, either as exact prototypes, or as having points in common with the design sought to be patented. So far, then, as concerns the novelty and originality of the invention, I take it that it has been abundantly shown to be entirely a negative quantity.

The would-be plan-patentees will get their patent; but what matters this? The Patent Office will "patent" *anything*, practically. It remains for the patentee to prove the validity of his claims. Having been patented, the invention must be supported. If it is a true invention, this costs the patentee comparatively little, since the courts are severe on infringements. If it be shown that the patent is invalid, the process of patenting has done harm or good to no one. Should any architect be served with an injunction to restrain him from carrying out some plan he has designed, and which is considered to "infringe" the patent plans, I doubt not but that, on his making the same publicly known, he will receive substantial support from the profession in sustaining his right to built on his plan. We all know how amazingly slothful the architectural profession is to act for the general well-being, but in a case of this kind I have a notion—false perhaps, but still a notion—that the co-operation would be forthcoming, since the true architect sees plainly enough the injurious effect of any restraint on freedom of design, and is aware that a rage for patenting of this nature, if validity should be proved, would be a worm and canker in the art of architecture. Co-operation would here be of vital necessity. I trust the reader will not think that I am giving undue importance to the subject. For my own part, I would look upon the attempt to patent an architectural plan in the same light as did Mr. Robert Walker, who, when the Council of the Society of Architects suggested that some reference might be made to this topic in his presidential address, intimated that it was unworthy of any serious notice. While, therefore, considering that it is beneath contempt, I am nevertheless bound to remember how out of apparently insignificant trifles comes much disaster, unless due attention be given. I would, accordingly, have every architect alive to the full bearings of this subject, and keep a constant, if easy, watch on the course of events.

The sky-signs nuisance received another mortal wound on Tuesday, when the seal of the County Council was affixed to a Parliamentary petition to bring in the London Sky-Signs Bill. An attempt was made by a councillor to modify the drastic nature of this measure, but happily failed. The passing of an Act to grapple with these offending signs and announcements will be a boon to the Metropolis, for I fancy I can detect an increase in their numbers, and that in a very limited space of time.

The Council's Bethnal-green Improvement Scheme has caused some small difficulty to arise as to the question of the unhoused tenants, who will, from a journalistic point of view, be left homeless on the demolition of the old buildings. I daresay that many of those residing in the district will manage very well of their own account, and have sufficient nobility of soul and manly independence to look after themselves, spite of the debilitating effect of the modern pauperising principle of action of institutions, governments, &c. To meet the difficulty named was, I believe, the object of the recommendation of the Housing of the Working Classes Committee, when they put forward a suggestion that the Council should acquire, in connection with the Boundary-street scheme, a piece of vacant land in Gossett-street. Why the recommendation was made to be withdrawn again the moment after by Earl Compton, the chairman of the committee, is a mystery to everyone outside the Council. The idea was to erect dwellings on this site before the main blocks included in the improvement scheme were tackled; and certainly something must be done in this way, as many persons will be unhoused who, for no fault of their own, will have little power to help themselves. To people of this description it must nowadays be no easy matter to find a new place of abode, since the pulling down of old rookeries and the worst class of property, where alone they can find the wretched accommodation suited to their means, has been so widespread an operation in the Metropolis. Taking also into consideration the large areas recently required for the formation of new streets, one may feel some surprise as to what becomes of these erstwhile inhabitants. Do they go into the suburbs with workmen's tickets? Doubtless vast numbers have taken to this mode of life, as the intentions of the Great Eastern Railway with regard to the new station at Liverpool-street, to which I recently alluded, show; but the poorest of the poor cannot avail themselves of these tickets. For such, it does appear to me, the County Council should provide, if they pull down a large area of slummy London; and this, howsoever many offered and withdrawn recommendations it may necessitate.

Campanology is an interesting science, and its devotees are interesting persons. They should be obliged to your correspondent the "M.A.S.C.Y." for his dissertation on bell-towers, bell-hanging, and bell-ringing. I rather wonder at his thinking of the tower at Quex Park when considering as to a model example of a campanile. If that curious erection is faulty constructionally, it is as undeniably so in outward appearance; and I know its general effect pretty well, having looked out at it from the Thames uplands for many a year in my youthful days when displaying evident suitability for an honourable architectural career by the construction of mud-houses. There is little doubt but that the architects selected for the competition will be able to supply designs of such stability that they won't come toppling down about the ears of the good people of Coventry, whenever a triple-bob-major is rung. I take exception to your correspondent's idea for a clock. A clock-tower is a clock-tower, and a bell-tower is a bell-tower, say I, with apologies for the double-barrelled platitude. Bell-ringing does not agree with the nervous system of a good clock. Let us have our clock-towers and our bell-towers, and plenty of them; excepting in London we cannot have too many, which I assert in the face of the remarks of more speakers than one at the Association the other evening. My advice to competitors (if there be a competition, which is doubtful), for the Coventry belfry would be not to make a feature of a clock, and if one be provided at all, let it be very modest and retiring, so that it may just serve to pass the time o' day.

I have read Mr. Rimington's paper on "Suggestive Points of Contact between Painting and Architecture," and find it as full of good matter as the one this artist read last year before the members of the Society of Architects. It deserves an attentive perusal from all, for a careful consideration of many of the analogies drawn between the two arts will certainly tend to breadth of design and good composition—qualities sadly lacking in the work of the average architect. All that Mr. Rimington has said as to "tone," "breadth," &c., should be duly weighed and its full benefit obtained; for in these days we get so little literature on first principles, that what is put before us possesses a double value.

It is my intention to persist in an agitation for greater attention to the ethics of design, which I have never relinquished, in these columns. To a lack of study of principle we may refer all those digressions in composition that are such painfully common objects of the street. I would be far from urging the designer to work by rule, which ever results in a hard, mechanical style—academical, at the best. The use of a principle is rather to prevent errors and digressions. It is commonly said in many circumstances that what is wanted is rather a knowledge of what to avoid than of what to do. In this light I would regard the usefulness of a study, and of an acquired knowledge, of those first principles of beauty that underlie every style. It helps us to avoid the positively ugly even if it may not be sufficient to enable us to produce intrinsic beauty. No one supposes that a set of rules and precepts, however recondite, can prove a "royal road" to design, though if they were it would be a consummation in some measure deserved, since a knowledge of these true principles cannot be obtained by desultory study, but only after long and persistent trials, inquiries, and experiments. The facts revealed by individual thinkers and writers constitute a fragment only of the whole truth, there being things beyond that only the eye sees and the heart feels, and cannot be conveyed to others by word of mouth.

GOTH.

ROYAL ACADEMY SCHOOLS.

THE prizes in connection with the schools of the Royal Academy were presented on Wednesday night by the president, Sir Frederic Leighton.

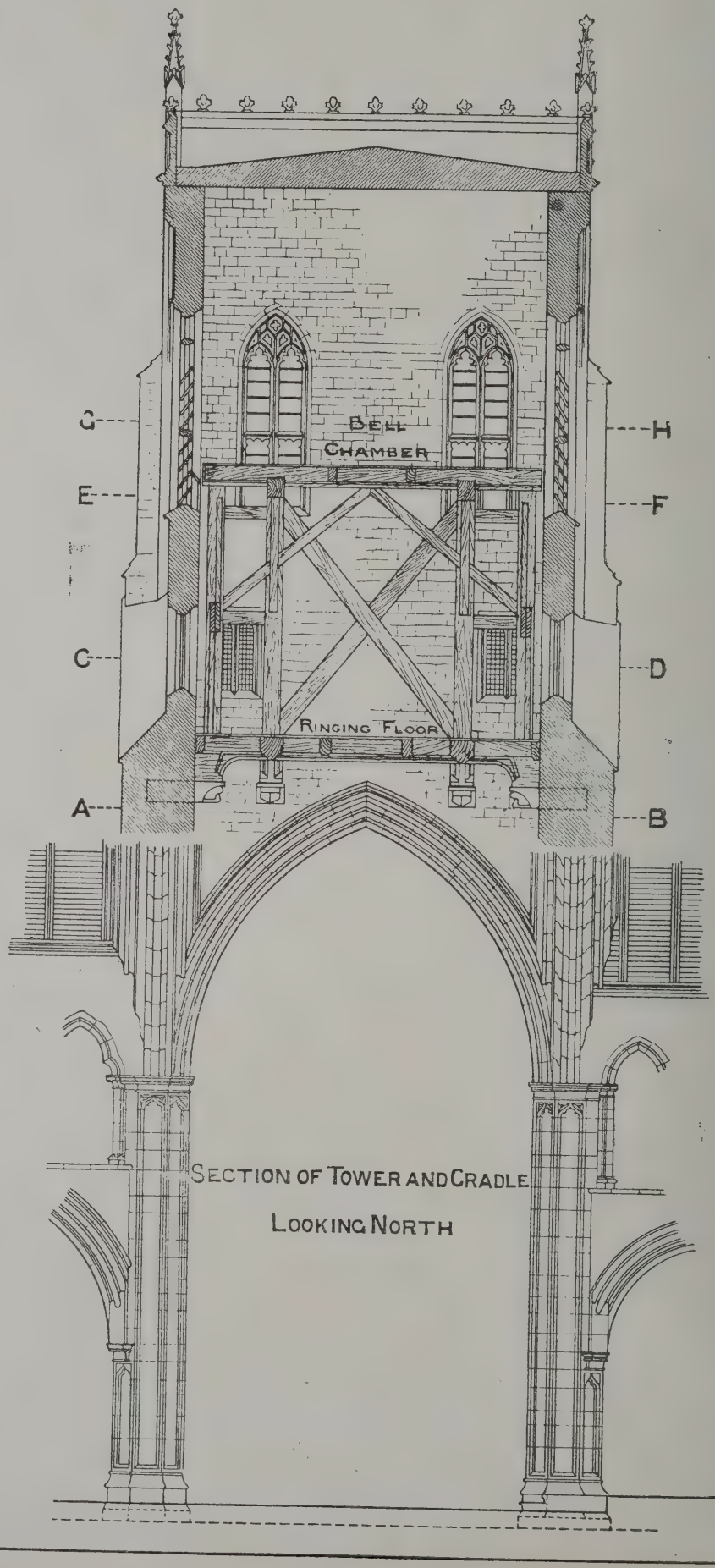
The President said the competition in general was very varied in quality, and in one or two of the categories they did not see quite all the zeal and achievement they should perhaps like. In other cases, however, most excellent results were put before them. The following prizes were then presented:—

Landscape painting (from "Gray's Elegy").—Creswick prize (£30), Ralph Peacock. Painting of a figure from life (open to male students only).—Silver medal, first; second, not awarded. Painting of a head from the life.—Silver medal, first, Amy Clara Durell; second, Frederick Dudley Walenn. Painting of a draped figure (open to female students only).—Silver medal, first, Mary Emily Postlethwaite; second, Helen Sarah Squire. Cartoon of a draped figure (Cæsar draping himself to die)—"In his mantle muffling up his face" ("Julius Cæsar," Act III. sc. 2).—Silver medal and prize (£25), Hugh Goldwin Riviere. Design in monochrome for a figure picture (the Messengers coming to Job).—Armitage prizes, first (£30) and bronze medal, Elizabeth M. Nichol; second (£10), Ernest Spence. Design for the decoration of a portion of a public building (the Adoration of the Magi.)—Prize (£40), Alfred Charles Weatherstone. Set of six drawings of a figure from the life (open to male students only).—First prize (£50) and silver medal, Ralph Peacock; second (£25), Francis Joseph Mackenzie; third (£15), Frederick Dudley Walenn; fourth (£10), Stephen Briggs Carlill (disqualified owing to having received a superior prize in the same competition before). Drawing of a head from the life.—Silver medal, first, Lawrence Edward Koe; second, John Percy Cooke. Drawing of a statue or group.—Silver medal, first, not awarded: second, Julia Meyer. Perspective drawing in outline (open to painters and sculptors only).—Silver medal, not awarded. Model of a design ("Rescued").—First prize (£30), Charles John Allen; second (£10), Everard Stourton. Set of three models of a figure from the life (open to male students only).—First prize (£50) and silver medal, Charles John Allen; second (£20), Andrea C. Lucchesi. Model of a bust from the life (open to female students only).—Silver medal, first, Anna Maria Gayton; second, not awarded. Design containing figure and ornament.—Silver medal, Paul Raphael Montford. Model of a statue or group.—Silver medal, first, William Willis; second, not awarded. Design in architecture (a country gentleman's house).—Travelling Studentship (£60), Charles Sidney Spooner. Set of architectural drawings (a portion extending over one bay of the choir stalls, and the screen at their back, in St. Paul's Cathedral).—Silver medal, first, Charles William Baker; second, not awarded. Set of architectural designs (upper school).—Prize (£25), Alexander Mackintosh. Set of drawings of an architectural design (lower school).—Prize (£10), James Cromar Watt. Plan of a building (a provincial picture and sculpture gallery).—Prize (£10), Herbert Tooley. Original composition in ornament.—Silver medal, not awarded. Perspective drawing in outline (open to architects only) (the end and three bays of the Hall in Hampton Court Palace).—Silver medal, no competition. The Landseer Scholarships in painting and sculpture, of £40 a year each, tenable for two years, given for the best work done in the examinatipn for passing into the second term of studentship, have been awarded—in painting, to John Henry Frederick Bacon and Frederick Dudley Walenn; in sculpture, to Basil Gotto and Andrea Lucchesi.

It has been decided to erect a technical school and free library at Leigh, Lancs., at an estimated cost of about £6,000. About half the required amount is in hand.

S. JAMES CH

CRADL



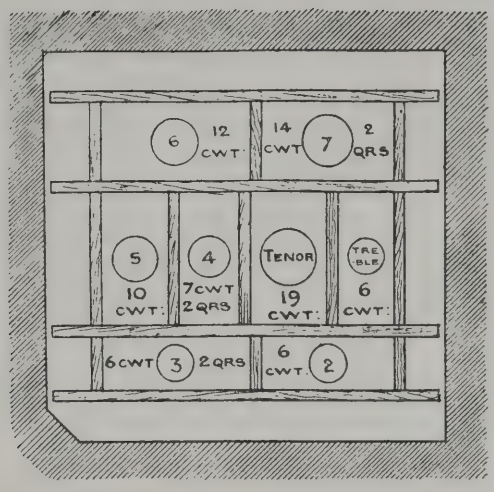
SECTION OF TOWER AND CRADLE

LOOKING NORTH

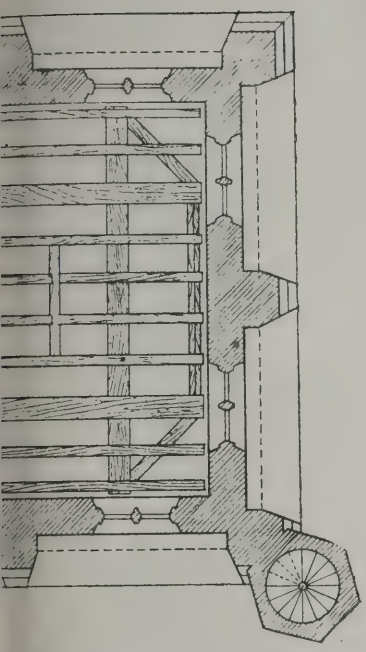
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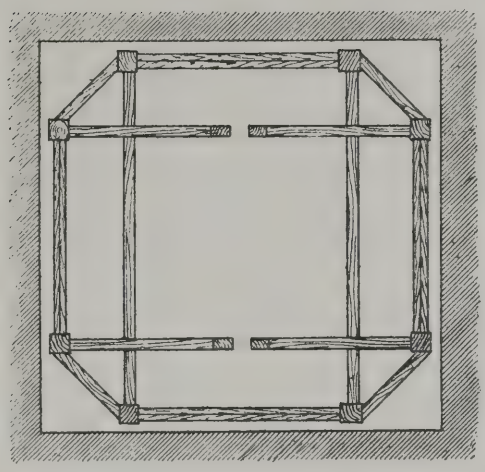
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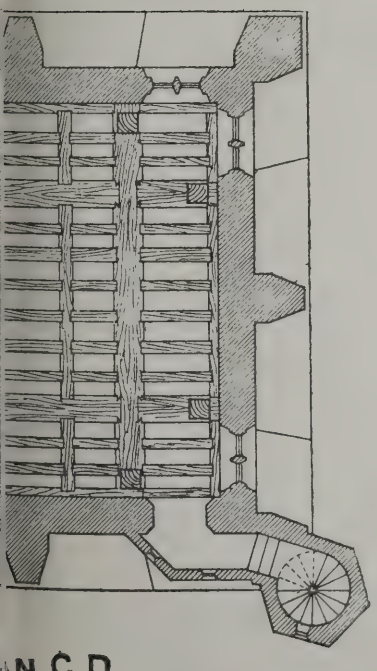
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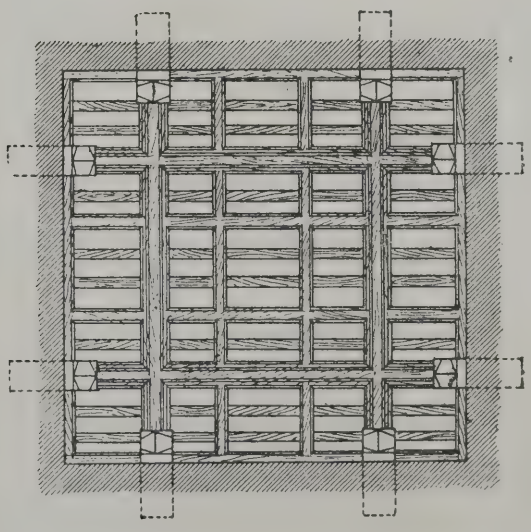
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R.J. WITHERS.
ARCHITECT.

20 30 40 FEET

THE LABOUR QUESTION AS REGARDS AGRICULTURE.

THE discussion of Mr. T. A. Dickson's paper on this subject, which was read before the Surveyors' Institution on Nov. 24, and to which we referred as having an interest for employers of labour not confined to those indicated by the title, was resumed by Mr. J. Shaw, F.S.I., at the meeting of Monday last. Mr. Daniel Watney, F.S.I., occupied the chair.

Mr. Shaw, after referring to what he considered some radical defects in the Poor Law Administration in past years, attributed the present improved condition of the labour market in rural districts greatly to the impulse given by the railway and other works some 20 or 25 years ago. He considered the position of the agricultural labourer to be now better than it had ever been before. Much had been done by the establishment of penny banks, clothing clubs, and allotment gardens, and in various other ways, to improve the conditions of rural life; but it was obvious that very much still remained to be done. In his paper, Mr. Dickson had laid great stress on the desirability of encouraging thrift. With this he quite agreed; but, when the establishment of a labourer's insurance company on a large scale was advocated, he doubted its applicability to the circumstances. The Post Office and penny banks gave the labourer, whether agricultural or otherwise, an opportunity of putting by small savings from time to time as opportunity arose, which was much more practically useful to him than the system of fixed compulsory payments to an insurance company. He entirely agreed that the more intelligent labourers should be taught simple useful trades, and the growing scarcity of skilled workmen, such as thatchers, for instance, bore out Mr. Dickson's argument in favour of such a step. A prime necessity was the provision of good cottages and sufficient gardens, and he was convinced that, in studying this question, not only must the conditions under which the labourer worked be considered, but also the surroundings amid which his wife lived and helped him.

Mr. E. Ryder, F.S.I., said that too much stress should not be laid on the historical aspect of this question, for fear that, in regarding that aspect too closely, the practical side might be overlooked. He thought that, within living recollection, the labourer of some twenty years ago was perhaps at his highest point of prosperity. The agricultural labourer had advanced in position quite as much as, if not more than, any class connected with land; while landowners and farmers had not received any adequate return for their capital and skill, the labourer had still continued to receive his wages. The man of the future, even in this capacity, would be an educated man, and he (Mr. Ryde) was convinced that education would make him a better and more useful workman. In his district (Surrey) he had met with very considerable opposition in his endeavours to establish Board schools; but when they were once established, he had heard it remarked by a competent authority, that the improvement in the work they turned out was very noticeable. He thought that there were many good benefit societies already in operation in rural districts, but quite concurred with the author of the paper that the old-fashioned village club was, as a rule, unsound and unsafe.

Mr. J. Looker, F.S.I., said that all the grief of agricultural labour had arisen from the fact that the profit of the employer had steadily decreased. The rates pressed far too heavily on the farmer. It seemed always to have been assumed that land was the most convenient thing on which to place the burden of taxation. Of four men who invested their capital in, respectively, land, the funds, a mill, or a bank, it would be found that, while the first paid rates on the gross estimated rental of all his land, the others, engaged in far more lucrative occupations, perhaps, were only assessed in the value of their dwelling-houses, or comparatively small business premises. He supposed that every employer of labour would like to pay much better wages if he could; but it was obvious that, where land was occupied by men whose capital was exhausted and whose profits were almost nil, the standard of wages must remain low. All improvements must be done by the class of landowners who could afford to lay out capital in view of a remote prospective return.

Mr. J. W. Willis-Bund (Associate) believed that the present dearth of good labour was to a large extent owing to the operation of the Education Act. He quite agreed that a good labourer well educated was a better labourer in consequence of his education; but the result of the School Board system unfortunately seemed to be to swell the great army of unemployed clerks, to increase the supply of scientific criminals, and to leave the farmer no choice but to pay his wages for the refuse labour, instead of being able to command the best. He was forcibly reminded of the words of Homer, which, as translated by Lord Sherbrook, ran:—

> "He could not sow nor reap,
> He was not wise at all;
> For though full many arts he knew,
> He badly knew them all."

The improved agricultural labourer knew 'ologies, could talk 'ologies, but could not do a good day's work.

Mr. J. Martin, F.S.I., thought one of the great evils was the present system of out-door relief, which he considered offered a premium on idleness. A good labourer was seldom in want of work, and he was sure that one great step towards producing good labourers was first of all to build good cottages, with good gardens close to them.

Mr. C. W. Gray, M.P., said that, at the wages paid, at least in East Anglia, the labourer, even with all his perquisites, could not be expected to put by much. One principle must and would always prevail in wages-paying. When a trade was prosperous, the wages would be high; but unless the present conditions of agriculture materially altered, the scale of payment of rural labour could not possibly alter. With corn at an unremunerative price, the labour market must necessarily be bad, and villages must become depopulated by the migration to the towns.

Mr. T. A. Dickson, F.S.I., in replying, said that although the Post Office and the savings banks were good, he thought their operations in country districts should be more extended. A man would not walk four or five miles to place his weekly 6d. in the bank. He had received a letter from Lord Hampden on the subject of his profit-sharing sytem, in which he said that although he guaranteed a minimum interest on advances of 2½ per cent. in bad seasons, and of course, at a higher rate in good ones, he had not been able to make the scheme a success. He (Lord Hampden) was convinced that the system of profit-sharing was in itself sound, and that it would be found the solution of the great labour and capital difficulty; but he had not yet succeeded in overcoming many of the difficulties which, in the case of co-operative farming, militated against its successful working.

The Chairman, in summing up the discussion, after remarking that the introduction of machinery had, probably more than anything, altered the conditions of agricultural labour, strongly advocated improvement in the direction of better cottages, and said that an ideal labourer's cottage should consist of a good kitchen or living-room, a scullery where a small fire could be lighted in summer, a small pantry, and a bedroom. The subject was one which he thought Mr. Dickson had done great service in so ably bringing forward.

THE BELL TOWER FOR ST. MICHAEL'S, COVENTRY.

THE following is the report of the architects who recently visited Coventry to report on the question of a new bell tower for St. Michael's:—

Dear Sir,—In compliance with the request made in your letter of the 4th of July last, we visited Coventry on the 20th inst., and carefully considered the points which were in that letter submitted to our judgment.

1. Whether a suitably designed campanile would detract from the beauty of the existing towers and spires.

On this we are unanimously of opinion that it would not, but might be made, on the contrary, very materially to add to the interest of the group.

2. As to the site for such a campanile if erected.

After having viewed the churches and their spires from various points, both close and distant, we are of opinion that the best position for such a tower would be immediately on the north side of the footpath traversing the churchyard from east to west, and opposite the two western windows in the north wall of the chapel of St. Lawrence.

We are further of opinion that such a tower should be connected with the church by a low porch or groined corridor, extending across the footway, over which it would be arched, thus directly connecting the tower with the church itself, and giving the church an additional entrance. This, considering the large congregations that occasionally gather there, we hold to be a matter of considerable importance, and for convenient egress it could hardly be better placed. The porch itself, we think, might be made a feature of great beauty, and the entrance to the tower would be best placed under the archway.

The position suggested for the tower would enable its designer to import a character of solidity to its base, such as we hold to be an element of primary importance in respect of the beauty, strength, and dignity of a structure devoted to the intended purpose.

3. As to the terms of a competition between five of the leading ecclesiastical architects.

With regard to this clause, we venture to express our opinion that a competition for a work of this kind is undesirable. We believe the views of those interested would be best served by intrusting the work to an architect of undoubted ability and experience, possessed of wide knowledge both of the general character and the details of the style of architecture in which the old church has been built.

We believe that such an architect, after consultation with the committee as to the special requirements to be met, would give them a design which, while possessing naturally a distinctive character of its own, would, when carried out, enhance the architectural interest which must necessarily always belong to such a magnificent structure as the Church of St. Michael in Coventry. We much doubt whether such a result would be attained by the process of competition suggested in your letter.

We are, dear sir, yours faithfully,
EWAN CHRISTIAN.
R. NORMAN SHAW.
ALFRED WATERHOUSE.

London, November, 1890.
George Woodcock, Esq.,
Bailey-lane, Coventry.

THE LEDWARD FUND EXHIBITION.

THIS small exhibition of pictures and sculpture is now on view at the Royal Arcade Gallery, Old Bond-street. Its object is to raise a fund in aid of the widow and children of the promising young sculptor, the late Mr. R. A. Ledward, whose death we recently recorded, and the proceeds derived from the sale of works (given for that purpose by sympathising artists) will, it is hoped, meet with substantial success. Mr. Harry Bates contributes a plaster relief illustrating "Psyche Transported by Zephyrus," on whose mantle she is borne recumbent in an attitude of easy and graceful abandonment. A tiny bronze statuette of "The Mower" emanates from the studio of Mr. Hamo Thornycroft, R.A., and is a skilful production. "Poetry" and "Sympathy" are two works in bronze by the deceased sculptor. Other pieces of sculpture are "A Brittany Peasant," by Mr. Onslow Ford, A.R.A., cleverly modelled; a small bust of John Ruskin, by Mr. C. Dressler; "Lilith," by Mr. A. Toft, exhibited at the R. A. in 1889; and a terracotta bust of a woman by Mr. H. Montford. Amongst oil paintings there is a noticeable and powerful head of St. Simeon Stylites, gazing upward, by Mr. W. M. Palin; also a "St. Cecilia," by Mrs. A. Lea Merritt, one of the most highly finished of the pictures exhibited; and a clever study of "Poppies" by Miss E. Hunt. Mr. W. L. Wyllie, A.R.A., sends a masterly water-colour sketch of a naval subject, "War is declared, and we put to sea—Watch man and arm ship"; and a vigorous water-colour drawing is "A Street in Brittany," by Miss A. M. Woodward, who obtains a sunny effect in subdued colours. "In the Desert," by Mr. J. McLure Hamilton, is a fine study in crayon of a huge lion outstretched on the sand by the margin of some water, while a lioness keeps watch by his side in a couchant attitude. Some other contributors are Mr. E. Burne Jones, Mr. J. McN. Whistler, Mr. Fred Brown, Mr. F. Brangwyn, and Mr. E. W. Waite.

THE PLUMBERS' COMPANY DINNER.

A DINNER and *conversazione* was given by the Worshipful Company of Plumbers at Merchant Taylors' Hall, to meet the Lord Mayor and the Sheriffs. The Master, Mr. W. H. Bishop, took the chair. Lord Basing responded to the toast of the House of Lords, and Mr. H. C. Raikes to that of the House of Commons.

n the course of a brief speech the Postmaster-General expressed a hope that in future the Lower House would do as much for the plumbers s the plumbers had done for the Lower House. The Lord Mayor, in acknowledging the toast in honour of the civic authorities, proposed by the Lord Provost of Glasgow, spoke warmly in favour of the work undertaken by the Plumbers' Company in the way of technical instruction, adding that if London was to maintain her position at the head of the commercial world they must pay all possible attention to, and do their utmost to promote, the development of sanitary science. The Master afterwards proposed "Modern Sanitary Science and Technical Education." Their aim, he said, was to effect an improvement of the conditions under which civilised communities lived. The plumbing craft claimed supervision and control of watercourses of the house from the roof to the basement. Their great lever was the registration of those who sought to follow the craft. The educational authorities had co-operated in the preparation of a comprehensive scheme of instruction upon the subject, and in some degree this had already been applied in certain classes. Apprentice plumbers might now receive continuous instruction in the principles of sanitary science and the practice of their trade. Sir Bernhard Samuelson, M.P., and Professor Garnett replied to the toast. The Master next proposed "The Municipal Corporations of Great Britain and Ireland," remarking that that assemblage of chief sanitary authorities of the three kingdoms by the Ancient Guild of Plumbers was evidence of a movement national in character and of assured success. With this toast the name of the Mayor of Manchester was coupled. "The Health of the Master" was proposed by the Lord Mayor, who said that the success achieved by the Plumbers' Company would have been impossible but for the presence of a guiding spirit at their head, and that he hoped to see a congress on hygiene held in the City of London next year.

CHIPS.

The lecture arrangements before Easter at the Royal Institute include three lectures by Prof. C. Meymott Tidy on modern chemistry in relation to sanitation; and three by Mr. W. Martin Conway on pre-Greek schools of art.

On page 807 we mentioned the opening of the Mission Chapel at Murchington, Devon. The roof of this building was covered with the Broomhall Patent Tiles, supplied by the Broomhall Tile Company, of London, and fixed by their own workmen. The company have also just finished covering the roof of St. Andrew's Church, Acton, Middlesex, and are now covering the roofs of St. Leonard's Church, Grimsbury, Banbury, Oxon, with the same description of tiles.

The town council of Bournemouth have raised the salary of the inspector of nuisances from £120 to £275 a year, to include the cost of clerical assistance.

A new school-chapel, erected for the Wesleyan Methodist body off Booth Ferry-road, Leeds, was opened on the 4th inst. The cost of the building is £800. Mr. H. B. Thorpe, Goole, was the architect.

The Wolverhampton School Board have under consideration a scheme for the establishment of a higher grade school. It is proposed to find accommodation for 600 children, the estimate of cost being £1,200 for the site, and £12 per head for buildings and furniture.

Athletic grounds are being laid out on a field off Burbage-road, Herne Hill, on the Dulwich College Estate. Mr. Charles Barry, as architect to the College Governors, has designed the club house and pavillon, which will be seated for 800 persons. Messrs. Peacock Brothers, of Brixton, are the builders.

The death occurred last week of Mr. J. B. Bennett, for many years head of the firm of Messrs. J. B. and F. Bennett, builders and contractors, Ipswich. The deceased was the eldest son of the late Mr. John Bennett, who carried on the same business at the works in New-street. After his father's death in 1857, Mr. J. B. Bennett continued the business on behalf of his mother, and in 1868 his brother, Mr. Fred. Bennett, became associated with him in partnership. During that partnership many important public works in Ipswich were carried out by the firm, notably the erection of the new Museum and the restoration of the Town Hall. Many of the large private houses on the north side of the town were also built by them, the most prominent being the residence of Mr. John Limmer on Constitution-hill. Mr. Bennett, who, at the time of death, was fifty years of age, leaves a widow and one son, who is articled to a local architect.

Engineering Notes.

New Roadway Bridge over the River Cam at Cambridge. — Owing to the township of Chesterton, which lies immediately opposite to the town of Cambridge on the north side of the River Cam, having considerably increased as a residential place, and to the fact of all the College boat-houses being on that side of the river, the boat ferries have proved wholly insufficient for the traffic, besides being very inconvenient and unsafe for children. The town of Cambridge, therefore, joined with the Local Board of Chesterton, and obtained Parliamentary powers for constructing a new road across Midsummer Common, just behind Jesus College, and a new bridge across the river. These works are now completed, and were formally opened yesterday (Thursday) by the Mayor of Cambridge jointly with the chairman of the Chesterton Local Board. The new roadway is about half-a-mile long, and is 40ft. wide. The bridge is 100ft. clear span, 40ft. wide between parapets, and has a clear headway at the centre of 14ft. 6in. above the normal water level, a towing-path 12ft. wide being formed on the south side. The superstructure consists of six elliptic wrought-iron arches, with braced spandrels, spaced 7ft. 6in. centre to centre under the roadway, and 9ft. 1½in. to the parapet girders. The outer spandrels are covered with cast-iron ornamental panels, surmounted with handsome cornice, plinth, and parapet, the coats-of-arms of the Borough, University, County Council, and Local Board being on their respective panels in the centre of the spandrel. The roadway over the bridge is of granite macadam, and the footpaths of granolithic pavement. The abutments are of Portland cement concrete, resting on piled foundations, and faced with Darley Dale stone. The total cost of the work is about £14,000. The engineers for the scheme are Mr. John J. Webster, M.I.C.E., of Liverpool and Westminster, and Mr. Frank Waters, of Cambridge, the whole of the works being designed by Mr. Webster, Mr. Waters acting as resident engineer. The sole contractor for the work was Mr. John Mackay, J.P., of Hereford, and he sublet the superstructure to the Butterley Company (Limited). The structure is an undoubted additional attraction to the district.

Society of Engineers. — The thirty-sixth annual meeting of this society was held on Monday at their rooms, 17, Victoria-street, S.W. The chair was occupied by Mr. Henry Adams, M.Inst.C.E., M.S.A., president. The following were elected as the council and officers for 1891, viz.:—As president, Mr. William Newby Colam; as vice-presidents, Messrs. Joseph William Wilson, jun., William Andrew Valon, and George A. Goodwin; as other members of council, Messrs. Chris. Anderson, R. W. Peregrine Birch, Chas. C. Carpenter, Henry Faija, C. Nicholson Lailey, T. Bell Lightfoot, William G. Pierce, and Arthur Rigg; as hon. secretary and treasurer, Mr. Alfred Williams; as hon. auditor, Mr. Alfred Lass (Messrs. A. Lass and Co.) —The annual dinner was given at the Holborn Restaurant on Wednesday. The retiring president, Mr. Henry Adams, occupied the chair, and amongst those present were Sir Benjamin Baker and Sir J. N. Douglass, F.R.S. (hon. members); Professor Unwin, F.R.S., Col. Banister Fletcher, F.R.I.B.A., and Mr. A. R. Binnie, engineer, L.C.C.; Mr. J. W. Wilson, jun. (vice-president), Mr. Jabez Church, Mr. Chas. Gandon, Mr. P. F. Nursey, Mr. Arthur Rigg, Professor Robinson, and Mr. A. T. Walmisley (past presidents); Mr. Alfred Williams (hon. sec. and treasurer), and Mr. G. A. Pryce-Cuxson (secretary). The President proposed the chief toast of the evening, "The Society of Engineers." Believing in the proverb that nothing succeeds like success, he ventured to affirm that the success which the society had already achieved was a forecast of the greater success which might be looked forward to. During the past year the number of members had increased by 8 per cent., exclusive of honorary members, the roll now numbering 454, and the attendance at the meetings had increased by 10 per cent. The financial position was highly satisfactory, and the rules had been revised during the year. The papers which had been read and discussed included various branches of civil and mechanical engineering, and were fully up to the mark of previous sessions. The visits to works in progress and centres of manufacture had this year included the Thames Ironworks, the Royal Arsenal at Woolwich, and the London and North-Western Railway Works at Crewe. In concluding his remarks the President paid a well-deserved compliment to the energy of the secretary, Mr. Pryce-Cuxson. The toast was coupled with the name of Mr. Alfred Williams, hon. sec. and treasurer, who was enthusiastically received. The health of the President was proposed by Mr. A. T. Walmisley, past-president, and Mr. Adams, in responding, proposed that of his successor in office, expressing his regret that business connected with his cable tramway enterprise was detaining Mr. Colam in the United States.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Leeds and Yorkshire Architectural Society.—It is the custom of the members of this society to dine together biennially, and in the intervening year a soirée is held. Such a soirée took place on Monday, and there were about fifty members present. Mr. W. H. Thorp (president) occupied the chair. Coffee was served in the large hall of the Queen's Hotel from 7.30 to 8 o'clock, and afterwards Mr. Clibborn, of Birkenhead, gave a description of scenes in Normandy, illustrated by some exceptionally fine lantern slides, contributed by Mr. Thompson, of Bold-street, Liverpool. Later, the evening was passed with music. Professor Kershaw gave a number of selections on the violin, accompanied by Mr. Fred Holt on the piano, and songs were sung by members of the society.

Manchester Society of Architects.—The report for 1890 commences with reference to two recently deceased members, Mr. J. P. Holden, for 28 years architect to the Dean and Chapter, and Mr. Ellis (of Barker and Ellis). The society now numbers fifty-two members. It has been decided to reconstruct the society, and to incorporate it under the Companies Acts of 1862-9. The council congratulate the members on the issue to the public of the revised code of Manchester Building By-Laws—a subject which during many years has engaged much of the attention of this society.

Manchester Architectural Association.—At the third ordinary meeting held on Tuesday evening, Dec. 2nd, at the Court Room, Diocesan Chambers, South King-street, Mr. T. Chadwick, A.R.I.B.A., president, in the chair, a paper was read before a large attendance of members by Mr. G. H. Willoughby, M.S.A., on "The Advantages of Terracotta relative to our Town and City Buildings." The advantages claimed by Mr. Willoughby were classified under the following heads, viz.:—(1) Its durabilities and wearing properties compared with stone and stucco, (2) its comparative cost, (3) its variety and permanency of colour, (4) its advantages for internal decoration in the form of glazed terracotta or faïence, (5) a few general objections. Each heading was clearly and exhaustively dealt with, and interspersed with references to many modern buildings, both in London and elsewhere, which were illustrated by photographs, drawings, and ink perspective views. The injury done to the progress and adoption of terracotta by the frequent using of an indifferent and perishable make (on account of cheapness) was very severely censured by the lecturer. The advantages of the permanency and variety of colour for the clothing of our town and city buildings were also clearly set forth, the author stating: "At present we (in Manchester) are far behind the Londoners in our appreciation and adoption of terracotta. To Mr. Waterhouse, who may be regarded as its most enthusiastic advocate, are the London people greatly indebted for the increased cheerfulness and sightliness his buildings have given to their streets and suburbs." The application of faïence (or glazed terracotta) for internal decoration was also commented on, and its use in some of the Manchester buildings recently erected "was (the lecturer said) a sign of its recognition and future value as a permanent decorative material." Before concluding, several objections to terracotta, and suggested remedies for same, were fully gone into, and at the finish of the paper a cordial vote of thanks to Mr. Willoughby was proposed by Mr. Davies-Colley, and seconded by Mr. Mee, and endorsed by Mr. Chadwick (the president), Mr. Hodgson, and others.

Royal Scottish Society of Arts.—At a meeting of this society held on Monday evening at Edinburgh, Mr. R. K. Miller, vice-president, in the chair. Mr. J. H. Cunningham showed a series of photographs exhibiting the operation of floating into its permanent position upon the stone piers the 1,523ft. span of the bridge over the Ohio River at Pittsburg. The span was built on shore upon trusses of a sufficient height to carry it to the top of the piers, and span and trusses were then floated out into the river upon pontoons, from which the span was finally brought into position upon the piers.

Society of Architects.—The third ordinary meeting of the Society for the present session was held on Tuesday evening at St. James's Hall, Piccadilly. Mr. Edgar Farman, hon. secretary, occupied the chair. Mr. Henry Fawcett Crawford, 99, Main-street, Cavan, was elected as a member, and one nomination was also announced. Mr. A. Wallace Rimington, R.P.E. (Assoc. S.A.), read a paper, entitled "Suggestive Points of Contact between Architecture and Painting." The address (see p. 815, *ante*) was illustrated by a series of valuable etchings and engravings, lent by the Fine Art Society, of New Bond-street, W. A vote of thanks was cordially passed to the author on the motion of Mr. W. H. Seth-Smith, seconded by Mr. W. A. Wilberforce, and supported by Messrs. W. Hewitt and W. Allport.

York Architectural Association. — The eighth session of this Association will be opened on Thursday evening next, the 18th inst., when an address on "Edwardian Architecture," by Mr. B. Priestley Shires, a former secretary of the society, and now of Plymouth, will be read.

COMPETITIONS.

City of York.—Of the sixteen designs submitted in competition for the furnishing of the New Council Chamber for the city of York, that of Mr. Gilbert Smith Doughty, architect, of Nottingham, has been accepted.

Swansea.—A competition is to be held shortly at Swansea for a new higher-grade school. The site will either be next the club in Alexander-road, or on the site of Russell House. A premium will be offered for the best set of plans. These are to provide accommodation for 800 boys, office for the use of the board, caretaker's residence, technical and manual instruction rooms, a gymnasium, physical lecture room for 120 students, a chemical laboratory for 60 pupils, and two art class-rooms.

CHIPS.

Competitive plans for a working men's club have been invited at Ayr. The club is to contain a hall capable of accommodating 600, a billiard-room, reading-room, recreation-room for games, &c., and is not to cost more than £1,800. Two prizes of no less than £12 and £8 are to be given to the two unsuccessful architects next to the one whose plan is adopted, whose princely recompense will merge into the ordinary commission.

A scheme is being prepared by the Hastings borough surveyor for the purpose of obtaining an additional water supply, the cost of which work is roughly estimated at £140,000.

The Whitworth trustees have added to their munificent gifts to Manchester 12½ acres of land, known as the Stanley-grove Estate, purchased by them for £27,000, for a hospital under the direction of Owens College. The site is alongside the Whitworth Park.

A parish-room in connection with St. James's Church, Shirley, Southampton, was opened last week. It consists of a disused chapel in the High-street, which has been rearranged for its new purposes from plans by Mr. W. Burrough Hill, of Southampton.

Steady progress is being made with the pier and harbour works at Torquay, commenced last summer by the local boord. Mr. Inglis is the acting engineer, and Messrs. Cochrane and Sons are the contractors; Mr. A. Buchan being the clerk of works.

The section of the main line of the Midland system between Bedford (North) and Oakley has just been increased from two to four lines. The additional double track was brought into use last week, and will be exclusively used for goods trains.

The East Grinstead rural sanitary authority have adopted plans and a scheme prepared by Mr. N. A. Smith, C.E., for the sewerage of the village of Groombridge, and have applied to the Local Government Board for sanction to borrow £2,800 for carrying out the works.

Building Intelligence.

Blaengarw. — This town, situate at the northern end of the Garw Valley, has been created through the sinking of collieries, and now contains about 3,000 inhabitants. A little church in the centre of the town was consecrated on Monday by the Bishop of Llandaff. The church is a stone building, cruciform on plan, and in plain Early English style. The nave is 61ft. by 28ft., and the chancel 23ft. by 19ft. 6in. There is also a vestry and an organ-chamber, spaces being left on the north side for extra accommodation—the present being for 300. The ground woodwork is all of pitch pine, and the roofing of stained red deal. The building is heated by hot air on Porritt's system. The contract price was £1,085, making the cost 72s. a head. The architects were Messrs. Bruton and Williams, Cardiff and Barry Dock, and the builder was Mr. John Rees, Ynysybwl.

Cambridge.—The new buildings of the Persse School for Boys in Cambridge were opened on Thursday, Dec. 4th last, by the mayor. The general plan of the school building is that of a large hall, with twelve class-rooms grouped on the north side of it. The hall is 77ft. by 37ft. 6in. wide and 25ft. high to the wall-plate. It has an open-timbered roof. The class-rooms are each 24ft. by 20ft., and those on the ground floor are 13ft. high, and those on the first floor 15ft. to the collar. Besides the above rooms, there are head master's and assistant master's rooms, a large entrance lobby, and a board-room on the east and west sides, and then all necessary lavatories and outbuildings. The lodge is a small building at the gateway, calculated to accommodate a porter without family. The general style of the building is that of the end of the 17th century. It is built of red bricks, and the roof covered with tiles.

Cardiff.—A special meeting of the Free Library Committee was held at the town hall, Cardiff, on Wednesday week, to consider the plans for the proposed extension of the free library building. Mr. Edwin Seward, R.C.A., of Seward and Thomas, architects, submitted four sets of alternate plans of the new building, and said before setting to work upon them he had visited some of the best free libraries and reading-rooms in the country, including that given by Mr. Carnegie to Edinburgh at a cost of £50,000. There were two essential differences to be noticed in the planning of the building, and the first was the position of the entrance. Mr. Seward produced the plan showing the entrance from the Hayes, and the committee recognised that the taking away of so large a space by a central corridor from the building was undesirable, and, after considerable discussion, this plan was unanimously decided against. Mr. Seward then proceeded to show the difference which would result from placing the entrance in Working-street and in Trinity-street, the former being adopted by the committee. The question of the position of the art gallery was discussed, and it was decided that it should be placed on the upper floor with the museum, although the architect regretted that he could not arrange for it on the ground floor of the building. The plans were considered in detail, and ultimately that marked No. 4 was adopted, subject to alterations. The estimated cost of the building was £15,000. It was decided to complete the building, and apply for further borrowing powers, in accordance with this plan.

Hull.—The ceremony of laying the foundation-stones of a new Grammar School for Hull was performed on Friday. The site is in Leicester-street, and the design for the new schools has been prepared by Messrs. Smith and Brodrick, of Hull. It will be in a Collegiate style of Gothic architecture, having an elevation of red brick and stone dressings. The site was purchased some years ago and the design prepared, but the matter has remained in abeyance owing to the refusal of the Charity Commissioners to sanction the work until there was an endowment fund raised. The funds for the erection of the building are obtained from the sale of the original Grammar School, which is now a clergy-house and school in connection with Holy Trinity Church.

Llandewy Ystradenny.—The parish church of Llandewy Ystradenny has been reopened after having been partially rebuilt from plans by Mr. S. W. Williams, of Rhayader. When the ol roof was stripped, it was found that the timbe was so decayed as to need entire removal. Th north wall of the old church was found to b fairly sound; but all the south and west wal and part of the east wall had to be taken dow and rebuilt, therefore the present fabric is nearl new. The restored church has been rebuilt o the lines of the original fabric as nearly a possible. Although Late Norman priests' doo remain, little of the work taken down was earlie than the 17th century. The style adopted Early Perpendicular, the nave windows ar square-headed, the east window is a three-ligh one, and the west window of two lights. Th roof is continuous over nave and chancel. Th bell cot, at the west end, is framed in oak an covered with oak shingles. The floors of th nave and chancel have been laid with tiles fro the works of Mr. J. C. Edwards, Ruabon; th floors under the seats are laid with wood block set in asphalte, by Mr. R. L. Lowe, of Farn worth, near Bolton. The church is heated by Porrit's underground stove. The seats are o pitch pine. The pulpit, which is of oak on stone base, is the gift of, and has been carved by the Hon. Edith Walsh; it has been speciall designed by the architect. The contract ha been carried out by Mr. John D. Williams, o Knighton, at a cost of £800.

London School Board.—At the last meetin of this Board the Salaries' Committee reporte that they had had under consideration th following letter from Messrs. Gedge and Co with reference to the Capland-street School:— "We are of opinion that Messrs. Wall Brother have broken their contract with the Board, an are liable to an action for damages. They ar bankrupt, and the statement of accounts shows possible dividend of from 2s. to 2s. 6d. in th pound. Two actions are already pending agains them at the suit of the Board for similar breache of contract. One of these is expected to be trie on Monday week. We advise that the result o this action be waited for before commencing a action with regard to the Capland-street School." In view of this letter, and of the result of th action brought by the Board against Messrs Wall Bros. with regard to the Kilburn-lan School, the Committee recommended that the be authorised to enter an action against Messrs Wall Brothers and their trustee in bankruptcy to recover damages for breaches of contract i the erection of the said school. This was agreed to. On the motion of Mr. Lucraft, the attentio of the Works Committee was called to the metho by which urgent orders for repairs to building and furniture have been given, with instruction to remedy the same.

Redbourn.—The completion of the parti restoration of Redbourn Church was marked o Wednesday week by a service, in which Dr Festing, the new Bishop, took part. For som time the state of the nave roof has caused grav anxiety, and last winter it was found to b necessary to take steps for its restoration. A committee for the purpose was formed, Messrs J. E. K. and J. P. Cutts, architects, were con sulted, and under their direction tenders wer invited; that of Mr. Redhouse was accepted The nave roof has been reconstructed wher necessary, repairs to chancel arch, and cleanin the pillars and walls carried out. The roof o the north aisle was reboarded and releaded. Th roof at the east end of the south aisle (a sectio supposed to have been built by John of Wheat hampstead) was so far gone that, with the excep tion of three of the old timbers, it has been re placed by a new oak roof of a similar pattern t the old one, the beams of which were moulded The unused space in the basement of the towe has been converted into a vestry, and the wes door leading into the new vestry, and which wa formerly blocked up, has been opened. Th vestry is parted from the church by an oak screen with panels of cathedral glass. The organ ha been removed from the south of the chancel an placed at the eastern end of the south aisle. Th centre aisle has been widened, the pews have bee varnished, and the walls have been re-coloure throughout.

Tynewydd.—On Thursday, Nov. 27th, th ceremony of laying the foundation-stone of church at Tynewdd was performed by th Countess of Dunraven. The church, which i designed to accommodate about 400 worshippers will be inexpensive in character, the style bein Early English. It consists of a nave, 63ft. 6in

by 25ft. The chancel is also 25ft. wide by 26ft. 6in. long; and an organ-chamber and vestry, 23ft. by 10ft., is also provided. The roof internally will be open to the apex, and constructed of unvarnished pitch-pine. The chancel roof is similar, and is divided from the nave with a double principal. The seating and furniture are to be of pitch pine. Externally the walls will be faced with grey stone, and the jambs and arches of doors and windows are to be worked out of Bath stone. The long roof, which is to be covered with green slates and a red tile ridge cresting, will be broken over the chancel with a lofty bell-flêche. The church, including the whole of the seating and furniture, heating apparatus, and boundary walls, will cost £1,500. The architect is Mr. E. M. Bruce-Vaughan, and the contract is let to Mr. John Haines, of Cardiff.

Walsall.—A block of buildings which has just been completed for Mr. Draycott at the junction of Lichfield-street and Bridge-street was formally inspected last week by the mayor and corporation. The building comprises five retail shops on the basement; a suite of rooms used by the Literary Institute; and photographic and picture-framing premises. The greater part of the fittings and fixtures have been executed by Messrs. Norton and Co., of Birmingham, from designs prepared by the architect, and are in character with the style of this building, which is Queen Anne, treated in red terracotta, with a sea-green slated roof, surmounted with iron cresting and a flagstaff. The contract has been carried out by Messrs. Bradney and Co., of Wolverhampton, from the designs and under the superintendence of Mr. F. E. F. Bailey, A.R.I.B.A., Walsall.

CHIPS.

The Kettering School Board have decided to build two schools, each for 1,050 children, in different parts of the town, and have instructed Mr. J. A. Gotch to prepare the plans.

An inquiry was held at Bacup on Friday by Mr. S. J. Smith, one of the inspectors of the Local Government Board, relative to an application by the Bacup town council for power to borrow a sum of £18,000 for the purchase of land at Glentop for sewage works, and the sewerage of the Stacksteads portion of the borough. The town clerk said the population of the district now proposed to be dealt with was 6,000. The borough surveyor said the land proposed to be acquired was 3 acres 3 roods, and it was proposed to treat the sewage with a solution of lime and alumina, and afterwards pass it through filtering beds on to the river. Mr. Melliss, C.E., of London, said he had gone over the plans and estimates prepared by the borough surveyor, and he thought they made a complete and workable scheme.

Lord Burton has just borne the cost of a porch for the west door of St. Paul's Church, near Burton-on-Trent. The porch is made of English oak, and is almost throughout filled in with drapery panels, the whole being surmounted by a carved creston, which bears a shield, on which the letters I.H.S. are carved. There is also a floral carving let in above the doors. The doors are divided, so that the top portions may be opened alone, when necessary for ventilation. A wing of corresponding material and workmanship has also been placed on either side of the porch, and these conceal the heating pipes and portions of the bare walls. The work has been executed by Messrs. Rattee and Kett, of Cambridge, from the designs of Mr. G. F. Bodley, A.R.A.

The church of Welsh St. Donatts, near Cowbridge, is now to undergo restoration. The building was in a very dilapidated condition, and quite unfit for use. The tower and bell framing is to be made good, new floors and passages in the tower, nave, and chancel, new heating apparatus, new pulpit, lectern, altar, and seats, the complete restoration of the grand old oak doors, &c. The architects are Messrs. Kempson and Fowler, of Llandaff.

At the Manchester Consistory Court on Friday faculties were decreed for St. James's, Lower Darwen, in which it is proposed to place a figure monument to the memory of Emily Clegg Lees; St. Leonard's, Walton-le-Dale, in which it its proposed to replace the plain glass in the north transept with stained glass; parish church of Middleton, where two new bells are to be added to the present peal of six in the tower; parish church of Flixton, stained-glass window on the south side; St. James's Church, Church, two stained-glass windows. Citation was also granted for St. Thomas's Church, Radcliffe, where it is proposed to erect an oak reredos, and to put stained glass in two windows on the south side of chancel.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

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Received.—B. and P.—W. H. L. and Co.—E. G. M.

Correspondence.

PATENTED PLANS.

To the Editor of the Building News.

Sir,—Referring to your editorial remarks of November 7th and 14th, and to the letters of Mr. J. Sinclair Fairfax and Messrs. Leeming and Leeming, respecting our patent, we have to say:

That the greater part of the adverse criticism contained in the above appears to arise from a misunderstanding of the extent of the class of building to which our patent is applicable, and to the indiscriminate use of the words "public building." The title of the patent states that it is "applicable" to "public offices and courts," and the preliminary specification states that "it is primarily intended to control the public when admitted into the building," and "is *not* applicable to all such buildings as hospitals, workhouses, lunatic asylums, prisons, palaces, and mansions," where "the public have little or no business, and are generally admitted only by special permission." For the same reason it is not applicable to Houses of Parliament. Neither is it applicable to museums and picture galleries, where the public are admitted unreservedly, and are allowed to wander unrestrictedly. But, by the very nature of the invention, it is applicable only to such buildings as have general or inquiry offices, by or through which the public have entrance to the private offices.

As to its novelty, the three principles embodied in it, viz.:—(1) Building in wings or compartments; (2) the use of a central hall; and (3) the entrance by or through a general or inquiry office, have been applied separately in many buildings; and the first two are applied in combination in the Natural History Museum, the Royal Courts of Justice, and no doubt in other buildings; but the application of a *combination* of the *three* principles to any one building is, so far as we are aware, an entire novelty. This has been, necessarily, a much more difficult problem to solve than the application of any one principle or of any two principles in combination, and having solved the problem, we are entitled to and may safely trust to the protection of a patent.

In reply to Messrs. Leeming and Leeming, we have to point out that the Royal Courts of Justice do *not* "embody all the advantages claimed for the patent plan," inasmuch as the offices are not approached by the public from the central hall, but from the open quadrangle at the outside of the main building, and are arranged with private offices which open directly from public corridors. Neither can the courts be fairly said to take the place of the general offices in our plan, as, if used for the purposes of inquiry and passage for the public to other rooms, they would be useless as courts.

Messrs. Leeming and Leeming are also wrong in their statement, that Messrs. Verity and Hunt's design for the Nottingham Municipal Buildings is "almost identical with our plan," as the following comparisons will show:—Messrs. Verity and Hunt have the three departments—accounts, gas, and water—using one pay-office in common, and with general clerks' offices in a corridor common to all. We have "entire separation of the several departments." Messrs. Verity and Hunt's corridor (called "private" by Messrs. Leeming and Leeming) is open to the public hall at both ends. We have a separate official corridor for each department, and it cannot be entered by the public except by or through the general or inquiry office. Messrs. Verity and Hunt have also some of the private offices separated from the general offices of the same departments by the public hall; and the private offices of the heads of the three departments, viz.:—the borough accountant, the gas manager, and the water manager, are not shown to be on the same floor as the general and pay offices. Our private offices all open out of the official corridors, and cannot be approached by the public except by or through the general or inquiry office, and the official corridor; and the private offices of the head of a department being in the midst of his departments, enable the management to be more perfect than by the plan generally adopted.

We wish also to state what has led to the invention. Our attention was first called to the defects of the corridor system of designing public offices by the publication of the numerous competitive plans for the Admiralty and War Offices, which showed an extraordinary length of corridor, some of the designs having no less than 3,350 yards, or nearly two miles, of public corridor, with about 700 office doors. We immediately thought of the great advantage, in so large a building, of a proper subdivision into separate wings or compartments, each complete in itself; and we have, in the six years since this competition, gradually improved, and, we believe, perfected, the application of the principle of subdivision to such buildings.

We do not share your apprehensions as to "the rapidity and certainty with which unscrupulous persons will follow up with a whole galaxy of patented plans," as it will be useless to patent any which are not either new in principle (which of necessity must be very rarely discovered) or new in combination of old principles, which will be difficult to invent. We quite agree with you, that "the advantages of protecting by patent a clever plan will be an incentive to invention," and that "a good idea will be more likely to be perfected"; and if it leads only to more thorough study of plan, we think the profession will be largely benefited, and will receive more confidence from the public. We do not see that "the patenting of a design [plan] would seriously hamper the profession, for they would have to steer clear of existing rights." If a patent plan is really useful and valuable, the profession should use it as they do a patent for any article of building; not paying the royalty themselves, but advising their clients to do so. We shall, as far as possible, seek to follow this course in regard to our patent; and, in the case of competition for public offices, to arrange that the payment by the public body for royalty shall cover the right to competitors of submitting designs based upon the patent plan. This would not be derogatory to the profession, any more than is the custom of basing plans for hospitals on the pavilion principle, and for board schools on the central-hall principle, which leaves ample scope for display of the ability of the architect in modifying

the plan to meet the special requirements of each case, and in choice of the architectural treatment. —We are, &c., Flockton and Gibbs.
Sheffield, Dec. 10.

Sir,—Along with Mr. Alfred Ardron, of London, I furnished designs in the preliminary competition for the proposed Sheffield Municipal Offices, which, with the other unsuccessful plans, were publicly exhibited after the first decision.

These were based on the system now being patented by Messrs. Flockton and Gibbs. Believing this to be a novelty, special attention was drawn to it in the accompanying report, a copy of which is still in the hands of the town council.

Messrs. Flockton and Gibbs inspected these plans when exhibited, and were made acquainted by me with the portion of the report bearing on the question immediately the final decision was come so.

A claim to patent anything can only be opposed on certain rigidly definite grounds, which in this case do not exist.

The patent will therefore probably be granted; but its usefulness is doubtful, as anyone who has worked on similar lines before may do so again.

I do not like public correspondence, but after Messrs. Leeming and Leeming's letter in your last issue, I wish to state that I, too, shall have no hesitation in working in the future on the system that is to be the subject of this patent.—I am, &c., Herbert W. Lockwood.
Queen Insurance Buildings, Church-street, Sheffield.

NEW SYSTEM OF TUNNELLING.

Sir,—I have read with interest the article in the Building News of yesterday. As a practical engineer, I should like to know how the process would work if in driving the "needles" forward a large stone or boulder were met with? Would the needles cut through it, or how would it be got through? The occurrence of such an obstacle is common enough in boulder clay.

I suppose the arching would be done as closely as possible up to the obstacle, and that it would be cut through or removed in the ordinary way? The system of driving forward these strong grooved "needles" seems to be very good, and likely to prove of great service in tunnels, whether of large or small dimensions, in strata other than rock.—I am, &c.,
December 6. M.I.C.E.

SLATES.

Sir,—For colour and texture of surface in appearance the remarks of "Goth" in his "Wayside Notes" on green slates are all very well; but it should be remembered that there is no better quality of slate than the best Welsh—as, for instance, that from the quarries of Smith or Lord Penrhyn—and that in many roofs soundness is of greater importance than appearance, especially when out of sight. That which gives the slates from these quarries their uninteresting texture when laid over a considerable surface of roof—viz., the evenness, perfect plane, and closeness of fit—causes them to be most efficient in excluding the wet. Undoubtedly, as slate, they are the best adapted to their initial purpose, the forming of a tight roof, and, being less absorbent than any other description, they longer resist decay, which is principally caused by the attacks of frost. The very thinness of these slates is one of the best signs of their quality; no bad slate is capable of being split so thin, and it may be taken as a sure test of a good sound slate that it can be split thin. This is very unfortunate, as the slates are made so very fine, that, like the celebrated Cremorne sandwiches, it is almost necessary, when they are being taken up the ladder, to carry a weight on top to prevent them being blown away. "Goth" suggests that they should be thicker, and graduated in size like the Westmoreland slates (which, by the bye, are not made graduated, but of random sizes, and are sorted and graded by the slater). I have tried hard for both these desirable things; but notwithstanding my buildings require slating by the acre, the quarry working is too conservative to permit the usual methods of cutting and splitting to be departed from. The messages I get from the quarries are to the effect that they can sell as many slates as they desire in the usual way, without troubling their heads about new-fangled notions, and I have been assured by a slater that when he required a freight of Countess slates of a particular thickness his cheque was returned and order refused; and, in confirmation, he told me that, having a particular order for a not very large number of Bangor slates, he had to purchase blocks of the size required, and bring up a Welshman to split them in London, where I saw the man actually at work.

If "Goth" can, by merely paying for them—or even, in addition, praying for them—get the best Bangor slates made to his own sizes and thickness, I will thank him to let me know, and I will again specify these slates, which I have at present reluctantly dropped for others.—I am, &c., A. H.

Intercommunication.

QUESTIONS.

[10454.]—**Hot-Water Pipes.**—The Metropolitan Act, 1855, sec. 21, provides that "no pipe for conveying hot water shall be placed nearer than 3in. to any combustible materials." The Amendment Act, 1882, sec. 16, repeals this stipulation by providing that the restriction imposed by the former section is not to apply "in the case of pipes for conveying hot water at *low pressure*." What is low pressure? I am fixing a hot-water supply circulation, which I consider to be low pressure, as it has an expansion pipe of ample capacity at its highest point, and is fed with cold water from an open cistern. But the district surveyor insists upon the pipes conveying the hot water being kept 3in. away from woodwork, as though the Amendment Act had not been passed, upon the ground that the cold-water cistern being 40ft. high (i.e., above boiler), the system is not low pressure. If he is right—which I very much doubt—where would high pressure commence in an open circulating system? The head of water undoubtedly exerts a pressure on the lower parts of the pipes; but does that pressure cause the water circulating therein and in the boiler, to attain a higher (and more dangerous) temperature than 212°?—W.

[10455.]—**Legal.**—Is it legal for an architect who has been ordered to prepare plans and specification for a certain building, to get bill of quantities taken out without first having the permission of his client to do so?—Nankassa.

[70456.]—**Hearths.**—Can any reader inform me of a cheap and durable method of colouring hearthstones, or any means of improving their appearance (other than by tiles)?—J. W. S.

REPLIES.

[10450.]—**Ventilation.**—"Rustycuss" is on the wrong tack. If the carbonic acid was generally cold when generated or sent into the atmosphere, and especially also if it were not so largely diluted as it generally is, then it might be best to carry it off at the floor level; but this is not so. The carbonic acid as given off from the lungs, and from gas-lights, &c., being warmer than the air, rises upwards, and before it could get away at an outlet at the floor would have to fall, and in falling would be mixing with the general atmosphere of the room, and so be breathed over again. To prevent this rebreathing of the vitiated air before it gets cooled and falls, and gets diffused, is the object of carrying off the vitiated air or carbonic acid, with its bad companions, at the roof.—W. P. Buchan.

CHIPS.

The church of St. Michael, Rudbaxton, Pembrokeshire, is to be restored by Mr. Reginald G. Pinder, F.R.I.B.A., of Bournemouth, the architect appointed by the restoration committee. It is one of the oldest churches in the county, and possesses many interesting features. It is at present in a very bad state of repair.

The free library for Bermondsey, of which the foundation stone was laid last week, is being built in red brick and stone from plans by Mr. J. Johnson, A.R.I.B.A. The estimated cost is £7,000. The site adjoins the Bermondsey Town Hall in Spa-road.

A memorial brass to the late Rev. Edward Thring, headmaster of Uppingham School, has been placed in the new galilee of the chapel of that school, a building recently erected by Messrs. Parnell and Son, from Mr. Arthur E. Street's designs, and illustrated in our pages on the 13th June last. The brass, which has an ornamental border of Provençal roses (Mr. Thring's favourite flower), was designed by Mr. Lawrence Turner, and executed by Messrs. Barkentin and Krall.

The Town Council of Gateshead having applied to the Local Government Board for sanction to borrow £9,000 under the Baths and Washhouses Acts, £9,837 12s. for scavenging purposes, £2,350 for providing a recreation ground, and £500 for an entrance lodge and other works at Saltwell Park, an inquiry was held on Friday by Col. Hasted, when evidence was given by the borough surveyor and others.

A carved oak screen has just been presented to St. Mary's Church, Wistaston, as a memorial to the late E. W. Delves Broughton, of Wistaston Hall. It harmonises with a memorial reredos, and, like it, has been executed from designs of Mr. John Brook, architect, of Manchester.

The smoking concert of the Royal Academy students will be held at the Meistersingers' Club, St. James's-street, to-morrow night, at 9 p.m.

LEGAL INTELLIGENCE.

Fireproof Corridors and the Building Act.—At the Kensington Petty Sessions, on Tuesday November 25th (Mr. William Bird, chairman) J. W. Hobbs and Co., of Croydon, were summoned by Ellis Marsland, district surveyor of East Kensington, for an alleged breach of the rules of the Metropolitan Building Act in the erection of the well-known large 13-story building at Albert Gate. Mr. Walter C. Williams appeared for the district surveyor, and Mr. Horace Avory represented the defendants. The defendants were the builders engaged in the erection of the premises in question containing more than 125,000cub.ft., to be used as a dwelling house for separate families, and therefore coming within the provisions of section 22 of the Metropolitan Building Act (1855), which states that "The floors of the lobbies, corridors, passages, and landings shall be of stone, or other fireproof material." The district surveyor contended that the corridors in this instance were not constructed in accordance with this rule, inasmuch as although the main portion was formed of concrete and iron joists, the top surface was covered with wood, and submitted a drawing showing a margin to the corridor of ½in. oak superimposed upon a ⅝in. thickness of deal affixed by deal block bedded in the concrete of the corridor. There was also an open channel in the concrete on either side of the corridor for pipes and electric wires covered by an iron grating resting on the edge of the oak margin; the central portion of the corridor was covered with 1¼in. oak block flooring bedded in cement on the concrete. The district surveyor contended although this mode of construction would prevent a fire extending vertically, it would not prevent a fire extending horizontally from suite to suite on the same floor, the wooden surface conducing to the spread of fire, and especially along the edges of the channels formed in the concrete for containing the pipes and electric wires; moreover, the surface was not a fireproof material, and therefore contrary to the section recited. For the defence it was contended that the wooden surface formed no portion of the floor, which was of concrete, but was only an addition to it for the purpose of preventing the clatter occasioned by a hard surface such as cement or tiles, and took the position of cocoanut matting or linoleum, and was less combustible than either, and as the concrete was 14in. thick, and was the floor required by the Act, the woodwork in question was simply a covering to it, and not the floor. The majority of Bench, after consultation, decided to support the district surveyor, and on Mr. Avory asking for a case, granted it. Subsequently, however, Mr. Avory asked the Bench, before coming to a final decision, to allow him to call further evidence to show that the corridor in question was practically fireproof. The Bench then decided to reopen the case and allow Mr. Avory to bring his additional evidence, and adjourned the case for 14 days. At the adjourned hearing on Dec. 9th, Mr. F. Izant, surveyor of risks to the Phœnix Fire Office, was called in support of the defendant's contention, and stated that in his opinion the floor in question was practically fireproof, as the woodwork was bedded directly in the concrete, and could only be burned upon the surface, and if during the progress of a fire the surface was charred, it would form an uninflammable non-conducting surface. He also thought the chance of the fire spreading along the edge of the channel, protected as it was by being bedded on the concrete, very improbable, and he should not hesitate to call the corridor in question a fireproof one. The Bench, without waiting for Mr. Avory to call his other witness, appeared satisfied with the evidence, and dismissed the summons, the chairman stating that in the opinion of the Bench "the floor, as constructed, was practically of fireproof material." The Bench also refused to grant the district surveyor a case, although it was represented to them that the London County Council (so important did they consider the question) had instructed Mr. Marsland to apply for it.

Damages Claimed for Breach of Contract.—At the Manchester Assizes, last week, Dr. Cox claimed damages for breach of contract against Messrs. Moore and Sons, contractors. In 1888 Dr. Cox determined on building a house at Eccles. Tenders were invited, and the lowest of five sent in was £2,233, and the highest £2,800. Dr. Cox accepted the lowest of these tenders, and the work began. A contract was drawn up, and this, the plaintiff alleged, had been broken by the defendants, the materials not being, as provided, of the best quality. Dr. Cox now sought to recover in money the difference in the value of the house actually built and the house which should have been built. For the defendants, it was submitted that their work was done honestly and well. Defects in the building of the house there undoubtedly were, but they were such as the defendants had from the first been prepared to remedy, in accordance with the contract. The judge directed a verdict for the defendants, and gave judgment.

Claim by an Architect.—At Birkenhead County Court, last week, before his Honour Judge Wynne Foulkes, an action was brought in which Mr. Eddy,

an architect, of Birkenhead, sued Mr. Hope, contractor, for £45, for services rendered in connection with a gas-holder tank he was constructing in 1888 at Neston, and a large quantity of water pipes he was laying down for the Walton Local Board. The work done was in advising the defendant about a mode of remedying defects in the foundation of the tank, which had caused the gasworks engineers to threaten to take the contract out of his hands and do it themselves at his cost. There were also consultations and letters and interviews. The defence was that the work was grossly exaggerated, the basis of charge irregular, having been calculated on the value of the expense saved to the defendant. Defendant paid £10 into court. After a lengthened hearing his Honour gave judgment for the plaintiff for £30 with costs.

CLIENT BOUND BY CONTRACTOR'S ORDERS.—MUSGRAVE AND CO. v. COCHRANE.—In the Queen's Bench Division on Saturday, the plaintiffs, manufacturers of stable fittings, sued Col. M. Cochrane for a sum of £117 in respect of goods supplied. The defendant denied liability. The goods in question consisted of fittings for stables the defendant was erecting at Cadogan-place, and the plaintiffs' case was that the defendant ordered them. The defendant, on the other hand, said they were ordered by a contractor, who undertook to the plaintiffs to be responsible, and who had been paid for them. The contractor was called, and stated that he gave the order, and was responsible. The jury, however, after deliberating for some time, found a verdict for the plaintiffs for the sum claimed, and judgment was given accordingly.

CHIPS.

The parish church of Backford, Cheshire, has been reopened after decoration of the walls of the nave with frescoes, the work of Mr. Edward Frampton, of London.

The town council of St. Helen's, Lancs, have voted £100 to the borough surveyor in recognition of his work in connection with the erection of the new baths in Boundary-road.

The new mission hall, which has been erected in the Grove, Totnes, has been opened. It consists of a hall and class-room, the former 40ft. by 28ft., and the latter 28ft. by 20ft. The building has been erected by Messrs. Brook and Ash, Totnes.

The new Empire Theatre of Varieties in Newgate-Street, Newcastle-on-Tyne, built from the designs of Oliver and Leeson of that city, was formally opened last week. Mr. Alexander Pringle, of Gateshead, was the contractor.

Foundation stones have been laid of a new adult school at Highbridge, Somersetshire. It is Queen Anne in character, and has been designed by Mr. C. S. Leech, of Weston-super-Mare. Mr. Keats, of Burnham, is the builder.

Various improvements are in progress in Oxhey Church, Hants, from designs by Mr. J. E. K. Cutts, including the provision of a reredos in oak.

Mr. Francis William Bedford, of Leeds, has been awarded the Ashpitel Prize by the council of the R.I.B.A., on the recommendation of the Board of Examiners.

From Chester the discovery is announced by Mr. Earwaker of fourteen inscribed stones and various architectural fragments of Roman buildings.

Mr. C. H. Brodie writes, stating that at the last R.I.B.A. meeting, reported by us on p. 780, "I expressly disclaimed any intention of discussing what the President had said. I asked a question, and received the polite reply I expected."

The first of a series of twelve lectures on "The Elements of Architecture" was given at St. James's Hall, Piccadilly, on Thursday evening, by Mr. G. A. T. Middleton. The course is specially intended to assist students in preparation for the R.I.B.A. examinations, and is illustrated by lantern views. The first lecture dealt with the origin of Grecian architecture, the development of the Doric and Doric orders being traced, and their proportions shown. Mr. Middleton closed by giving views of some of the principal buildings in which they were used.

On Saturday memorial-stones were laid in connection with the building of an additional Wesleyan Sunday-school in Whingate, Armley, near Leeds. The new premises include an assembly-room to accommodate 600 persons, and classrooms along two sides of the structure, while the existing school is to be altered into an infants' schoolroom and two large classrooms. This scheme will cost £900. The architect of the new building is Mr. F. Rhodes, Wortley; and the principal contractors are Mr. Paul Rhodes, builder, Leeds, and Mr. Elam, joiner, Stanningley.

A new cemetery is being laid out at Wenlock for the burial board. The contract for the boundary walls and fencing has been let to Mr. George, and that for the chapel and lodge to Mr. Charles Corfield.

WATER SUPPLY AND SANITARY MATTERS.

MARKET HARBOROUGH.—The new waterworks for Market Harborough and Great and Little Bowden were formally opened on Thursday, the 4th inst. The new supply has been obtained from two springs at Husbands Bosworth and from the valve house and reservoir in that parish is conveyed some 8½ miles to Harborough by gravitation in 10in. pipes, the service reservoir being situate on Barn Mill Hill, and having a capacity of half a million gallons. The scheme was prepared by Mr. C. B. Everard, M.Inst.C.E., of Leicester, and has been carried out for the local board. Mr. Everard also designed the works, and superintended their construction, Mr. H. G. Coales, A.M.I.C.E., the surveyor to the local board, having acted as resident engineer for the works within the district, and Mr. J. Manley as clerk of the works for those outside the district, including the source. The general contractor was Mr. J. T. Wingrove, of Northampton, the pipes having been supplied by Messrs. C. E. Firmstone Bros., of Stourbridge, and the valves and other fittings by Messrs. Hamilton, Woods, and Co., of Manchester. The total cost of the works, including purchase of land and compensation, will be about £23,000.

NEWCASTLE-ON-TYNE.—A new sewer, which has been in course of construction at the instance of the Newcastle Corporation and the Gosforth Local Board, has been completed. The undertaking has been under way for about two years and a half. It was started in Lime-street and carried under Byker Bridge, the Ouseburn Railway Viaduct, and through a hill to Heaton Heughs. From this point the sewer was built across the Ouseburn, small pipes being placed to allow the burn water to pass unobstructedly on its course at low water, while at high tide the water will easily pass over the top of the sewer. The sewer runs through Jesmond Vale, and from Benton Bridge through Jesmond Dene it is constructed of pipes of the sanitary kind, 24in. by 18in. The oval brick sewer at the commencement is 4ft. by 2ft. 8in. internal dimensions, and narrows down to 3ft. by 2ft. The sewage running into the new duct will come from about 630 acres of land, and the cost will be about £16,000. The work has been carried out from plans by Mr. W. G. Laws, the City surveyor of Newcastle.

PAISLEY.—An important addition to the scheme for supplying Paisley with water is on the eve of completion. The present work is an extension of that undertaken under the private Act of 1881, when the burgh authorities obtained powers to take in the Rye Water, a tributary of the Garnock, which falls into the sea at Irvine. The spot selected for the reservoir was at a point on the stream about eight miles from Paisley, among the hills, above the mining village of Dalry. The reservoir was not made to the full size for which powers were taken. The embankment was stopped within 25ft. of the authorised height, and this formed a reservoir 40 acres in extent, with a capacity of one hundred and eighty million gallons. But the quantity of water obtainable—about one and a half million gallons per day—from this pond as thus constructed being found insufficient, it was resolved to enlarge the reservoir to the size originally contemplated, and this has now been done from plans by, and under the superintendence of, Messrs. Leslie and Reid, C.E., Edinburgh, the consulting engineers to the Paisley Corporation. The embankment across the Rye has been heightened from 45ft. to 70ft.; the area flooded now extends to 120 acres, and the reservoir has a capacity of seven hundred and fifty millions of gallons. The length of the reservoir is about one mile and a quarter, and the lake which will be formed will greatly enhance the appearance of the locality. The puddle wall is founded on trap rock of the district. The waste-weir is of great blocks of granite—most of them about a ton in weight—set in concrete, and forming a cascade of steps 25ft. in height, over which the water falls. The cost of the works has been about £70,000, of which one-half was expended in the partial construction of it six years ago. The contractor is Mr. R. B. Stewart. The limit of supply which Paisley and the neighbouring burgh of Johnston, which is also supplied, will have is 6,000,000 gallons per day to a population of 70,000, equal to about 85 gallons per head per day.

TAYPORT SEWERAGE, SCOTLAND.—The sea outfall works have just been completed at a cost of £3,080. The population of Tayport is about 3,000, and the contract has included new pipe sewers in every street. There are two sea outfalls into the tidal estuary of the Tay. All gases generated in the sea outfalls have been disconnected from the town sewers. The sewage discharges by gravitation at all states of the tide, and therefore no storage is required. Street surface water is admitted to the sewers. The sewers are flushed with brook water. The commissioners have expressed themselves well satisfied with the efficient working of the scheme, and with the fact that the actual cost has proved less than the estimate. The engineer to the works is Mr. W. H. Radford, C.E., of Nottingham, and the design was chosen in open competition. The contractors were Messrs. McKay and Son, of Broughty Ferry, near Dundee.

PARLIAMENTARY NOTES.

BIRMINGHAM POST OFFICE.—Replying on Monday to Mr. Sidney Buxton, Mr. Plunket stated that the sub-contract for plastering at the Birmingham Post Office had been sublet to Mr. Welling by the contractor, with the consent of H.M. Board of Works. In July last the attention of the clerk of the works was called to the fact that the work in certain places was not being done in accordance with the specification, the cement being mixed with putty. The circumstances were fully investigated by the Board's surveyor and the architect of the building, and it was not proved that Mr. Welling was aware of the adulteration. There was a strong local feeling against Mr. Welling, and, being unable to determine on which side the fault lay, the Board did not feel justified in inflicting on him the heavy loss that would have been entailed on him by the withdrawal of the work from him in the middle of the contract. The job on the whole had been very well done, and the defects referred to were promptly remedied by Mr. Welling. In view of the strong feeling that had been excited in the case, the clerk of the works had objected to the continued employment of the men who were shown to have taken part in the adulteration, but not of others. Further inquiry seemed unnecessary.

The new head-quarters and drill-hall of the 1st Volunteer Battalion of the Sussex Regiment was opened on Saturday, at Brighton. The head-quarters and drill-hall are situated in Church-street, and cost £15,000. The hall is said to be the largest in Brighton, and there is also a Morris tube gallery, an armoury, sergeants' mess, commanding officers' and officers' quarters, and a canteen.

A bazaar was held last week at Evesham, having for its object the restoration of the fine church of St. Lawrence. A little over fifty years ago the then vicar set about the restoration of the church, then in ruins and disused. The north side was rebuilt, and the external restoration was, for the period, substantially done. The fine east end, with its double row of panelling and angle buttresses, was happily left in its original beauty. The elegant Perpendicular chantry on the south side, with its rich fan-tracery, remains much the same as it figures in Rickman, though a modern screen has been erected at its entrance. The two chief defects now proposed to be remedied are the ceilings, which are of stucco and plaster, and the seats, which are of painted deal, and as ugly and inconvenient in form as mean in material.

The annual soirée and concert in connection with the Edinburgh branch of the Joiners' Association was held on Friday night at the Oddfellows' Hall, Edinburgh. Councillor M'Crae presided, and there was a large attendance. The chairman congratulated the association on being able to distribute £289 in sick benefit, and contrasted it with the sum spent for strike allowance, which amounted to £5 8s. Mr. Peter Docherty, Edinburgh, said that the total income of the General Association for the year was £7,087 3s. 4d., an increase of £931 6s. 3d. over last year; and the gross expenditure was £7,050 3s. 4d., leaving a balance of £537 on the year's transactions.

A large clock and chimes have just been erected in the parish-church tower of Barrington, Oxfordshire, by John Smith and Sons, Midland Clock Works, Derby. The clock is fitted with all the latest improvements; all the wheels are of gunmetal, with machine-cut teeth. There is apparatus to continue the action during winding, and although the chimes play upon the ordinary church bells, the hammers are so arranged that the ringing is not interfered with. It will be a valuable adjunct to the church and a boon to the parishioners.

The contract for what will be the most powerful steam crane in the world of its type has just been let by the Clyde Trust to Messrs. Cowan, Sheldon, and Co., Carlisle. It is a 130-ton steam wharf crane to be erected on Finnieston Quay, Glasgow. When finished the crane will be tested by lifting 150 tons at a radius of 65ft., and its height from the level of the quay to the top of the jib will be 100ft.

At a meeting on Monday of the town council of Dunfermline, Mr. Chisholm, the burgh surveyor, submitted a report on the drainage system of the burgh, in which he stated that in order to provide an ample and satisfactory scheme of drainage for the requirements of the burgh, a sum of about £11,000 would be required. It was resolved to hold a special meeting to consider the subject.

The new highway bridge between Aberthaw and Cowbridge, and crossing the Cowbridge and Aberthaw Railway, was formally opened on Wednesday week by Miss Brewer, daughter of the engineer from whose plans it has been constructed.

Our Office Table.

The London County Council on Tuesday, after a lengthened debate, applied their seal to a petition to a separate Bill by which it will be attempted to moderate and regulate the increasing growth of "sky-signs" on roofs in the Metropolis. Under the Bill provision is made for an inspection or survey of sky-signs, and the district surveyor is to grant or refuse a certificate as to the stability of the sign and its stays and construction generally. The Council will grant a license for a continuance of the sign on the certificate being sent to them, and the license will remain in force two years. It may be renewed for two periods of two years each, making six years in all. The sky-sign is in every case, at the end of six years, to be removed, regardless of its structural condition, and failing its removal, summary proceedings against the owner will be taken by the Council. If the sign is wanting in stability, and is not repaired or strengthened, proceedings may be taken by the Council to demolish it. By section 4, after the passing of the Act it will be unlawful to erect or place any sky-sign wholly or in part above or over any house, building, structure, street, or way. Special clauses will prevent the Bill from applying to auctioneers' advertisements of houses to let, and brewers' signs. The General Powers Bill of the Council, which was also formally approved at the same meeting, contains the powers required by the Council for dealing with street improvements, bridges, and open spaces, as well as the Brook-street Artisans area, the site of Kennington Fire Brigade Station, and of the proposed station at Clapham Common; extension of powers in respect of Rosebery-avenue, the site of Millbank Prison, and inquiries as to markets.

It is proposed, in connection with the visit to Edinburgh in the summer of 1891 of the Royal Archæological Institute, to hold in that city an exhibition illustrative of heraldry in its various aspects. This will be the first exclusively Heraldic Exhibition that has been arranged in Britain, although such an exhibition was held in Berlin in 1882. Accommodation will be granted for the purposes of the Exhibition by the Board of Manufactures in the Scottish National Portrait Galleries. Mr. Balfour Paul, Lyon King of Arms, will act as chairman of the committee, and the exhibition will be divided into two sections—an historical section, dealing generally with objects of heraldic interest; and a decorative section, illustrative of heraldic painting and delineation as a branch of the Fine Arts. Mr. A. Ross, F.S.A. Scot., Marchmont Herald, is the secretary of the former section, which will appeal mainly to the historical and genealogical student; and the latter section, which it is hoped will be of interest to decorative and other artists, will be under the direction of Dr. R. Rowand Anderson, architect, and Mr. J. M. Gray, curator of the Scottish National Portrait Gallery. Mr. Thomas Ross, architect, joint author of "The Castellated and Domestic Architecture of Scotland," has undertaken to superintend the production of a series of drawings and reproductions of painted and other heraldic decorations of old Scottish castles and mansions; and Mr. Stewart Smith will collect a set of photographs illustrating examples of exterior heraldic sculpture throughout Scotland. If energetically organised and rendered fairly representative, the exhibition ought to prove of great interest, and very suggestive to architects and decorators.

The question of compensation for subsidence caused by brine-pumping has been amicably settled in the Cheshire salt district, Mr. Joseph Verdin, of Northwich, having offered £30,000 to be settled as a trust for the provision of compensation for injuries to property through brine-pumping in the districts of Northwich and Winsford. The trust deed sets forth that the gift is to relieve extreme cases of hardship and damage occasioned by subsidence in the Cheshire salt district, and explains that it will be devoted to private and public roads, except railways, tramways, and main roads; to sewer and drain-pipes, but not gaspipes; and to property other than that belonging to the county, gas company, board of guardians, trustes of the river Weaver, or those engaged or interested in the salt or alkali business. Compensation is to be given for the destruction or structural damage of buildings, to alterations of approaches, levels, erection of retaining-walls; to bolting together, underpinning, supporting, raising, or repairing buildings; and to raising, lowering, diverting, and making good injured roads. Under the deed power is provided to defray the whole or part of the additional cost incurred by the erection of framework buildings. A number of claims have already been received from sufferers, which will be considered at an early date.

The Housing of the Working Classes Act, 1890, is discussed in an appendix to the fourth annual report of the Federation of Working Men's Social Clubs, just issued. The council recommend that the machinery for assessing compensation under the Act should be simplified to a further degree and be made less costly; that the award of the Goverment arbitrator should be conclusive in all questions of amount; and that the costs should be regulated by a scale, and a limit placed upon the number of expert witnesses to value. The council also think that adequate provision has not been made for the expenses of carrying out the Act as regards the Metropolitan area. It is urged that the sanitation laws require consolidation.

The Bedford Hill Estate, adjoining Tooting Bec Common, and of which it is generally supposed to form an inclosed portion, is now being cut up for building purposes. Its chief feature is a grove of old trees close to the boundary line, and the builder offers to sell the strip of land on which the trees stand, to be added to the common, for £12,000. As it is probable that if half of this sum can be collected, the London County Council will be inclined to make up the remainder, an appeal is being made for subscriptions. It is doubtful if anything like £6,000 can be collected locally, as the bulk of the inhabitants hold their houses on short tenancies, and most of the houses in the immediate neighbourhood are of a small class. We have not heard as yet of any more or less liberal donations from the owners of the reversions, who will ultimately benefit largely by the preservation of the amenities of Balham, Tooting, and Streatham. A local committee has been formed, with Mr. Charles Mortimer, J.P., of Woodfield, Streatham, as chairman, who will be glad to receive any donations towards the purchase of the land.

The value of the personal estate of the late Sir Edwin Chadwick, of Park Cottage, East Sheen, who died on the 5th of July last, and whose portrait and biography were published by us on the 19th September, has been sworn at £47,766. The executors are Dr. B. W. Richardson, to whom the testator bequeaths £200, and Mr. James Heywood. His wife and daughter being otherwise sufficiently provided for, the testator bequeaths to his son Osbert three-fourths of the income on certain conditions. Subject thereto, the trust fund is to be applied as the trustees shall direct for the advancement of sanitary science. By the codicil to his will, the testator suggests that the trustees may offer a cup of the value of £20, to be given annually for a term of years, to sanitary authorities at home or abroad showing the greatest reduction in the death-rate of the population in their district. He suggests also the offer of a silver medal to the school teacher showing the best mental results of the half-time principle, and a gold medal for district school managers obtaining the best results in subjects named.

A new sort of pavement, according to *Wiener Bauindustrie-zeitung*, has been tried in some places with different degrees of success. The ground is first excavated about a foot deep, and rolled; then a layer of broken stone, 6in. thick, is spread over it, and melted tar put on, until the joints are filled. A layer of fine gravel is then scattered over the whole, and rolled. The same process is repeated, and the pavement is ready for use. In Budapest this pavement seems to be satisfactory; but something similar has been put down in Vienna, Carlsruhe, and Munich, and removed, as it showed a disposition to form ruts.

Mr. Harry Hems, of Exeter, and his merry men celebrated the 24th anniversary of the finding of "Ye Luckie Horse Shoe" on the evening of Thursday in last week by a supper in the studios in Longbrook-street. About a hundred employés and friends sat down, under the genial chairmanship of Mr. Hems, the vice-chair being occupied by Mr. Dyer. A feature of the evening was the presentation by the staff to the eldest son of the host, Mr. Grenville C. Hems, of an illuminated address, together with a silver-mounted and well fitted-up travelling leather case. With toast and song an agreeable evening rapidly passed away.

MEETINGS FOR THE ENSUING WEEK.

Monday.—Royal Institute of British Architects. Short papers on "Decorative Plaster Work," by E. S. Prior, M.A.; G. T. Robinson, Heywood Sumner, and Stephen Webb; to be followed by a practical demonstration of "Modelling in Plaster," by Messrs. Whitcombe and Priestley. 8 p.m.
Society of Arts. "Gaseous Illuminants," Cantor Lecture No. 4, by Professor Vivian B. Lewes. 8 p.m.
Liverpool Architectural Society. Special Meeting at 15, Cable-street. 7.30 p.m.

Tuesday.—Institution of Civil Engineers. Discussion on "The Lansdowne and Chittravati Bridges." 8 p.m.
Glasgow Architectural Association. "Impressionism in Architecture," by F. H. Newberry, New Master, Glasgow School of Arts. 8 p.m.

Wednesday.—Society of Arts. "Impressionism in Photography," by Geo. Davison. 8 p.m.

Thursday.—Leeds and Yorkshire Architectural Society. "At the Cathedral Door," by Wyke Bayliss, P.R.S.B.A. 8 p.m.
York Architectural Association. "Edwardian Architecture," by B. Priestley Shires, of Plymouth.

Friday. — Junior Engineering Society. "Artesian Wells," by Percy G. Bowen.

Trade News.

WAGES MOVEMENTS.

Bristol.—The board of arbitrators, consisting of four master builders and four operatives, have unanimously agreed to an award in the case of the dispute between Mr. Beavan and his workmen. They are of opinion that in three instances Mr. Beavan infringed Rule I. Clause B of the Working Rules agreed to by the Master Builders' Association and the operatives in their employ, by putting up the notices before ascertaining the opinions of the workmen on the jobs; but that in a fourth case he did not break this rule, having the majority in favour of the alterations. On the other hand, through ignorance of the fact that Mr. Beavan was a member of the Master Builders' Association, his employés broke Rule XI. by striking instead of bringing the dispute before a board of conciliation.

CHIPS.

The restoration of the cathedral church of St. Nicholas, Newcastle-on-Tyne, is about to be completed by the placing of a peal of bells in the tower. Part of the cost has been voted by the corporation, and the remainder will be met by a citizen, Mr. John Hall.

For the erection of the proposed new Royal Hotel the corporation of Weymouth have accepted the plans and designs by Messrs. Helyer and Hunt, of Bournemouth, on the understanding that the hotel shall not cost more than £27,000, exclusive of furnishing.

The Leicester town council decided on Tuesday night, after two nights' discussion, and by a majority of one, to open the free library, art gallery, and museum on Sunday for 12 months as an experiment.

The statue of the Emperor Frederick, erected by Sir Edgar Boehm, which the Queen has had placed in St. George's Chapel, Windsor Castle, will be unveiled on Monday next.

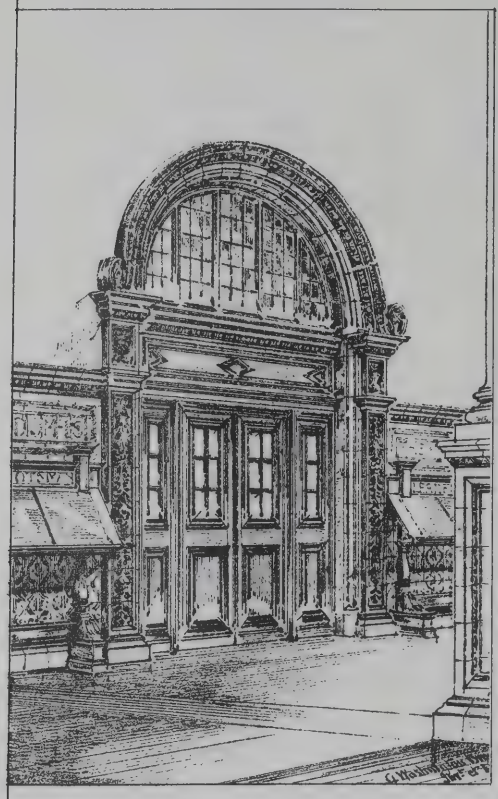
Mr. Thomas Ainsworth, head of the firm of Ainsworth, Sanderson, and Howson, solicitors, Blackburn, who was interred at the Blackburn cemetery on Monday, has bequeathed all his pictures and books (except those on law) to the free library of that town.

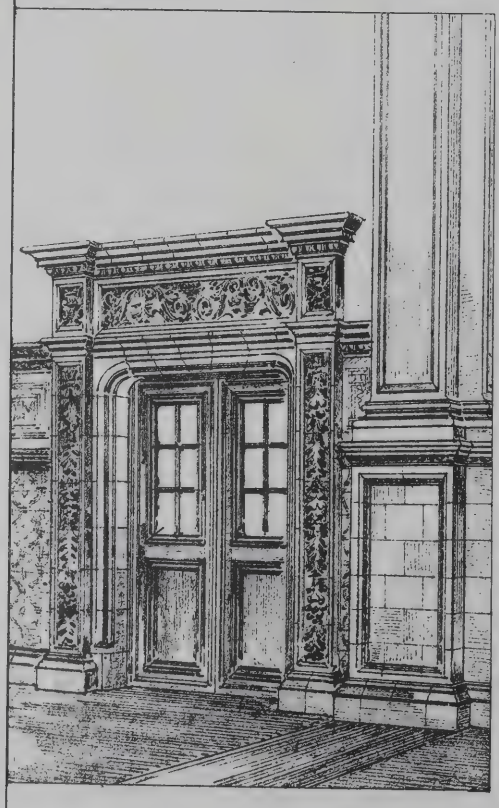
An officer sent out by the Provincial Government of Quebec to investigate the unexplored forests of the Northern Ottawa region, has returned, after several months' absence, and reports his discovery of about 2,500 square miles covered with the finest pine, spruce, and other valuable timber, with excellent streams to float it out. He describes this region, which lies between Abbitibbi in the west and Camachimaga in the east, as fertile in soil and temperate in climate.

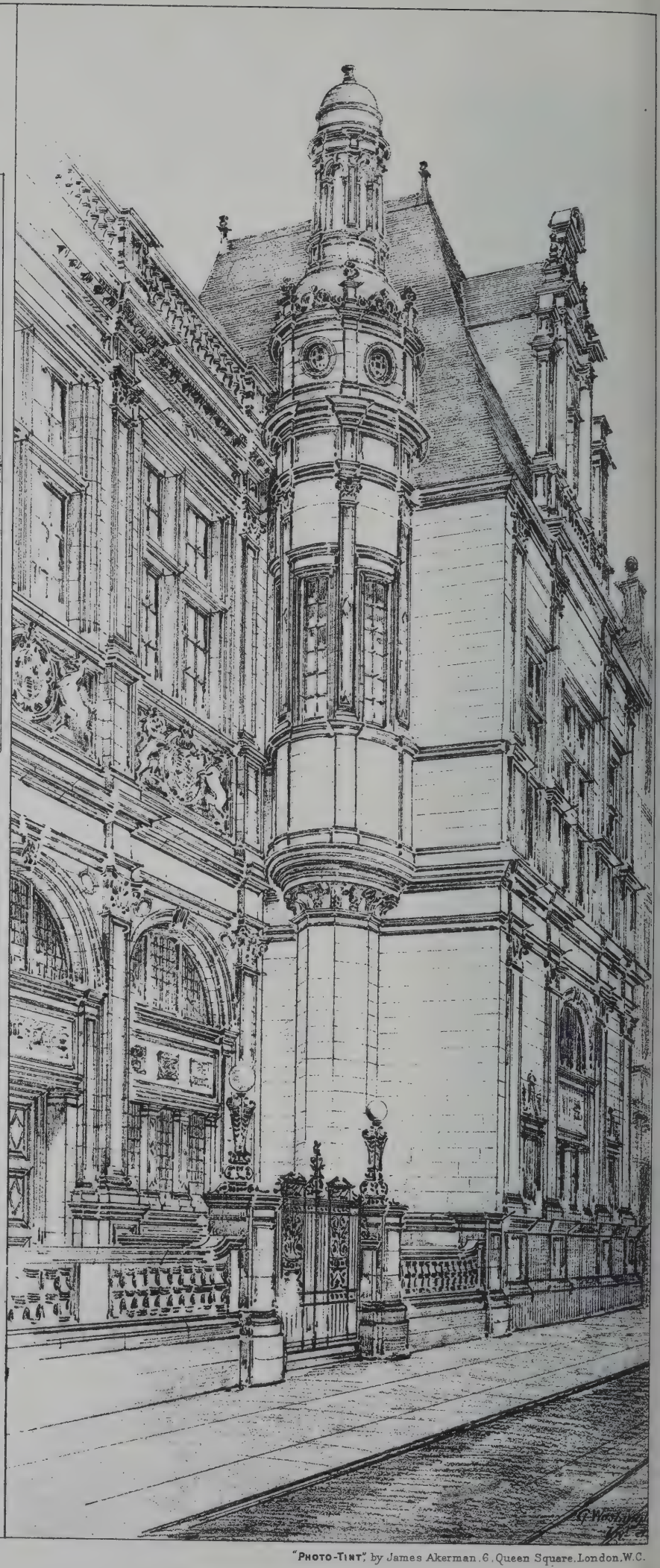
At the Gas Light and Coke Company's works at Kensal-green a three-lift gasholder, to contain seven and a half million cubic feet of gas, is being constructed by Messrs. Slater and Son, and the tank for its reception by Messrs. Lucas, Aird, and Ellis. The engineer is Mr. J. C. Trewby, and the engineer in charge is Mr. A. McMinn.

The Winchcombe school board have appointed Mr. Darby architect for a new school to be built at Gretton, and to be faced with Cleeve Hill stone.

EDINBURGH PUBLIC LIBRARY.







GEORGE WASHINGTON BROWNE
Architect.
EDINBURGH.

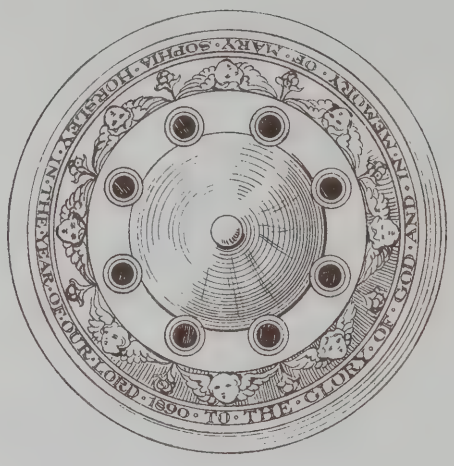
"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

MEMORIAL FONT TO Mrs J. W. HORSLEY

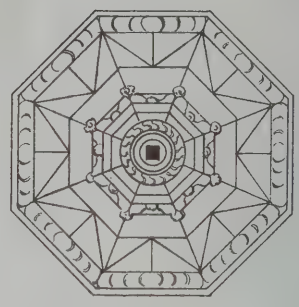
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MAURICE B ADAMS FRIBA
Architect *Chiswick w*

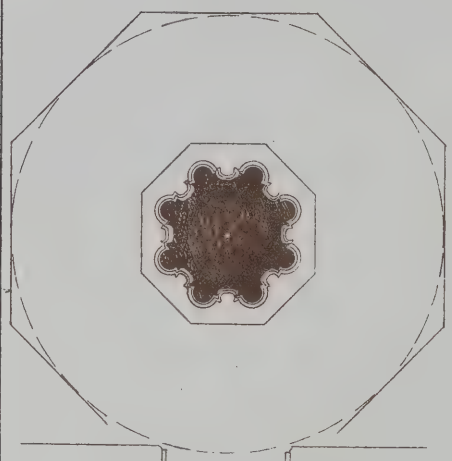


Plan above dome



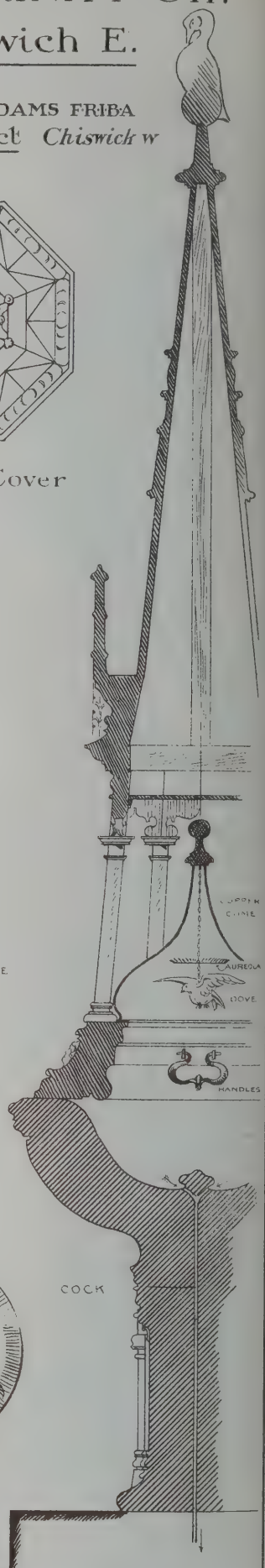
Plan of Cover

Pier Plan

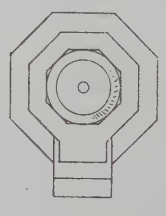




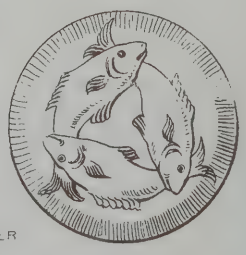
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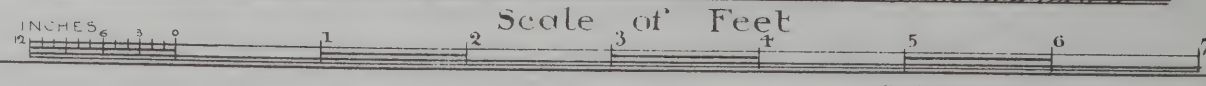


Section



PLAN OF SITE





Scale of Feet

Photo Lithographed & Printed by Jerrold Harman & Queen Square, W.C.


Marple Hall Cheshire
The Stables



Photo Lithographed & Printed by James Akerman 6 Queen Square W C

NATIONAL SILVER MEDAL AWARDED

DESIGN FOR MARKET HALL.

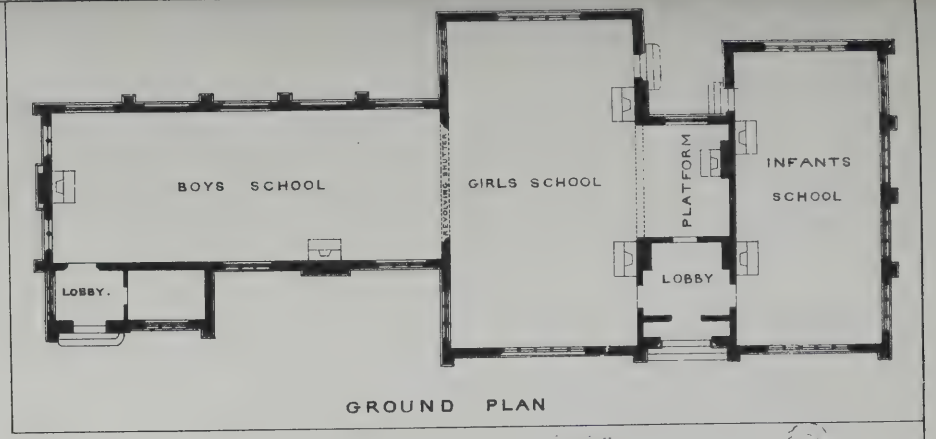
FRANK SHAYLER.



GROUND PLAN

"PHOTO-TINT," by James Akerman, 6, Queen Square, London, W.C.

CHURCH · SCHOOLS · HERNE · BAY : ERNEST · TURNER · ARCHT



GROUND PLAN

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"Photo-Tint," by James Akerman, 5 Queen Square London W.

Interior of St. Mary's Church, Portsea.

Sir Arthur Blomfield, A.R.A. Architect.

HE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LIX.—No. 1876.
FRIDAY, DECEMBER 19, 1890.

BLIGATIONS OF TENANTS TO REPAIR.

MANY people sign an agreement to keep the premises in "good tenantable air," though what that phrase exactly olies in the mind of the law they do not ible to inquire. When we find official rees and judges differing as to the meaning veyed, it seems not at all strange that inary tenants should differ as to what is ected from them. Indeed, it seems absurd expect anyone, however skilful and im-tial he may be, to decide upon any given e, unless he has seen the condition of the mises when the tenant entered, and can pare the first with the last state. enant naturally gets the worst of the case e enters a house that is in a bad state of air, for, according to the dictum of authority — Lord Esher — where the mises are not in repair when the ant takes them, he must put them repair in order to discharge his obliga- n "to keep and deliver them up in repair." t only so: a recent interpretation of the demands a standard of repair that is high in very many cases to suit tenants o enter dilapidated buildings. The words ood tenantable repair" must have some erence to a standard condition of ciency, and it cannot be taken too low. rally and justly, the condition of efficiency a building when it is taken ought to be- ne the standard; but it does not. It may so old and out of repair when taken, that 'ourt could not believe a respectable person uld take it, and so he has to put it in a ter state of repair at the expiration of the m than it was when he took it.

Our present remarks are to point out the nion of the Courts on the question of re- rs. In the case of "Proudfoot v. Hart," ich came before the Court of Appeal this ar, there was an agreement to keep a house "good tenantable repair," and so leave the ne at the expiration of the term of three ars. Damages had been awarded by the cial referee in respect of the cost in- red by plaintiff after the expiration of tenancy in repapering the walls of rooms, ainting internal woodwork where worn , in whitewashing and cleaning staircases l ceilings, and in replacing a kitchen floor. e Divisional Court only partly acquiesced the decision thus given, and referred the tter again to the referee to reconsider the ie upon principles they had enunciated. e plaintiff appealed on the ground that referee's opinion was right; but the lges on appeal took an independent w, refusing to agree with either of the ore-named authorities. We dismiss the ts of the particular case, and consider inly the question as to what a tenant is ected to do. We will suppose he takes ouse in which the wall-papering and nt to the internal woodwork are in a erable state, but which become worn out en he leaves the house. Now, according the generally received legal view, tenant- e repair extends to commissive and missive waste. The tenant must make d damage which is done by himself or ily (commissive waste), and also make d damage done by other causes, like m tearing off slates from the roof, or dows broken by stones. If he neglects lo the latter, further damage may result he premises, and he must make good this , because it has resulted from his lect of keeping the premises in repair, and is permissive waste. This general principle makes it clear, first, that all damage done by the tenant or his family has to be made good; second, that any damage done by a storm or by external agencies that may lead to further injury to the premises, must be repaired. Many things are included under this principle. A tenant may accidentally or otherwise break a door-panel or the balusters of a staircase, or a boy may throw a stone and break a window, or a violent gale of wind may cause the slates of the roof or a lead gutter to be torn off, for all of which he is liable; and if through want of timely repair the rain comes through the ceilings and causes them to fall, or damage is done to the wall-paper or plastering in consequence, he is responsible for the results of his negligence. But the mere wearing of a wall-paper, or the paint internally, is not usually considered a thing that a tenant is expected to make good. Justices Cave and Mathew are both of this opinion. With respect to paper on walls the former says: "I cannot see how, in any case, a man can be bound to put new paper on the walls simply because the old paper which was on at the time when he took the house has become worn out." If the paper is required to hold a wall or ceiling together (plastering, of course, is meant), the case may be different, but it is unusual. If the paper in this case is torn down and the ceiling falls, the tenant would be liable for commissive waste; or if the paper had so worn that it could no longer support the plaster, it might amount to a case of permissive waste, though it would hardly be fair to call upon a tenant to repair so rotten a wall. But that a tenant should be called upon to put up new paper, because the old has become discoloured or worn out by age, appears hardly fair to the majority of people. Yet this is a point upon which there is a difference of opinion. While one judge says a tenant is "not bound to repair what is worn out by age, nor to restore it, nor is he bound to replace anything that is worn out by age," another one, Lord Esher, says—"I am of opinion that under a contract to keep the premises in tenantable repair and leave them in tenantable repair, the obligation of the tenant, if the premises are not in tenantable repair when the tenancy begins, is to put them into, keep them in, and deliver them up in tenantable repair." These are rather opposite views of the obligations of a tenant to keep premises in tenantable repair. Lord Esher quotes some important rulings, amongst others that of Parke. The contract was to keep the premises in good repair as old premises, and deliver up the same in "good repair." According to the ruling of J. Parke, "the contract to keep the premises in good repair as *old premises* does not justify the keeping them in bad repair because they happened to be in that state when the defendant took them. The cases show that the age and class of the premises let, with their general condition as to repair, may be estimated in order to measure the extent of the repairs to be done. Thus a house at Spitalfields may be repaired with materials inferior to those requisite for repairing a mansion in Grosvenor-square." The lessee was to keep them in a state of good repair with reference to their age and class, and so give them up. It has been held by another judge (Rolfe) that the term "good repair" is to be construed with reference to the subject-matter, and must differ, as that may be a palace or a cottage; to keep in good repair pre-supposes the putting it into, and means that during the whole term the premises shall be in good repair. The conclusion, then, is this: that the state of the premises when the tenancy begins is immaterial, though the age of it has to be taken into account, and the obligation of the tenant decreases as the house gets older. From this conclusion it follows that the age of premises is the determining element; therefore a tenant in taking a house should ascertain its condition before he enters. Lord Esher points out that not only the age of the house, but its character and locality must be taken into account, because the same class of repairs as would be necessary to a palace would be wholly unnecessary to a cottage. A house need not be put into the same condition as when the tenant took it, but only in such a "state as renders it reasonably fit for the occupation of a reasonably-minded tenant of the class who would be likely to take it." So far for the principle. How is it to be applied? In the case referred to, he differs from the decision of the Court below. He agrees with the dictum that the tenant is not bound to repaper simply because the old paper has become worn out; but he does not agree that the tenant who has a covenant to keep a house in tenantable repair can never be required to put up a new paper. If, for example, the damp has caused the paper to peel off the walls, the tenant would be bound under his covenant to put up a new paper, though it need not be one of equal value to the old paper so long as it would satisfy a reasonable man. So with painting. If the woodwork would decay unless it is repainted, the tenant must repaint; but he is bound to go farther than that: he must leave the paintwork in a condition that is in keeping with the character and locality of the house, and will satisfy a reasonable tenant.

These are conclusions that appear to be logical and reasonable, though they appear to increase the obligations of tenants who covenant to keep in tenantable repair. It is difficult to say in some instances what "a reasonably-minded tenant" who took a house of a certain class would expect. The paper or the painting that would suit one person would not suit another. An ornamental ceiling originally painted and gilded that had become dirty, or the gilding black or discoloured, could not be expected to meet the requirements of a tenant who knew what such a ceiling ought to be, in which case, under the dictum we have cited, the outgoing tenant would be required to clean, repair, and regild it. Ornamental plastering or woodwork could hardly be exempted from repair because some "reasonably minded" tenants were satisfied with plainer finish to the rooms. The same principle of putting it into a state of tenantable repair would apply, though the Courts hold that a tenant is not bound to do repairs that are merely decorative. As to a rotten floor, the case is simple; for, however bad it may have been when the tenant entered, he is bound to put it into a state of repair befitting its character when he leaves. If quite rotten he must lay a new one; but if it can be repaired or patched to suit the general state of other parts of the premises, he is not called upon to renew it. Professional men are often called in to report on the nature of the repairs to be done by an outgoing tenant, and it is their duty to make themselves familiar with the law on the subject. There is a generally-received opinion that a tenant is not called upon to do more than repair commissive waste, and if the premises are old and dilapidated he is not required to repair them or to make them more tenantable than they were when he entered. This opinion is wrong. If they are out of repair when he takes them, he must put them into good tenantable repair, and maintain this condition throughout his tenancy. A surveyor called upon to make a specification of repairs, ought to be in possession of facts bearing upon the state of the house at the beginning of the tenancy; but he is often ignorant of it, and therefore the tenant is expected to do more than he is obliged to do. The three points named by

Lord Justice Lopes, in his definition of "good tenantable repair," age, character, and locality, are very often neglected by the surveyor, who puts down those things which he thinks ought to be done to render the house tenantable as a modern house. The stability or otherwise of the building, its "jerry"-built or other qualities ought to be considered as well; but this is a point very seldom, if ever, taken into consideration. A scamped house in a good locality, with cracked walls and ceilings, and decayed floors, constantly showing defects, naturally falls into dilapidation sooner than one that is well built though much older, and thus the tenant who signs a repairing covenant may have to do three times as much as he who takes a well-built house of the same age. The condition of repair in the former at the end of a few years would be much worse than that of the better-built premises, and the obligation to deliver in good tenantable repair would be greater. We think, therefore, stability and workmanship ought to be taken into account in estimating a tenant's obligations.

REBUILDING ON INSANITARY AREAS.

THE Bethnal-green scheme, which has occupied the attention of the London County Council for some time, and is still being debated amongst the inhabitants of that overcrowded district of the East-end with so much warmth, opens a problem of momentous bearing and of far-reaching results. It is no other than the question whether municipal or local authorities are justified in buying up insanitary areas, compensating the owners, turning the people who inhabit the houses adrift, and, in the mean time, rebuilding the houses in the form of huge blocks of flats. There are two points of importance involved in this question, the first being the purchase of insanitary areas for the purpose of rebuilding, the second the class of building with which it is proposed to replace the old dwellings. As our readers may be aware, the London County Council have, under the provisions of the Housing of the Working Classes Act, agreed to purchase an insanitary area of 15 acres at Bethnal-green, and to rebuild the dwellings, for which purpose the County Council proposed to acquire by purchase, or lease, a small area of land near, on which to build workmen's dwellings for the rehousing of the displaced tenants. The accommodation would be for about 250 persons on buildings of four floors. The report of the committee on this subject has since been withdrawn, it being understood that the gentleman who offered the site is about to erect cottage dwellings for the working classes. The main question is, however, how to deal with a large insanitary site. Is it desirable that the Council should purchase such an area and clear it, rebuilding upon it new blocks for the tenants?

We think it would be more in accord with the powers invested in the County Council if they brought the Act to bear upon landlords of insanitary houses, and Lord Compton's letter in the *Times* a few days ago conveys the impression that the Council have taken this view of the matter, and he says the committee of which he is the chairman "desire that a crusade shall be started, under Part II. of the Act of 1890, against the owners of insanitary houses." The rehousing difficulty is the one that presses; but not equally under both parts of the Act. By demolishing a large area of squalid houses, a great number of the working classes is displaced, and must find accommodation in the neighbourhood, as this would be the result of putting into force Part I. of the Act. On the contrary, if the Council proceed to put the machinery of the second part into operation to compel owners of insanitary houses to demolish or repair them, the displacement would not be so great, nor so severely felt by the inhabitants. There is another and stronger moral reason why it is better to deal with the landlords of insanitary areas than with the site as a whole. It has been asserted in evidence, and is a matter of every-day experience, that landlords of the lowest class of property endeavour to evade their responsibilities and obligations to their tenants, believing that by so doing there will be a chance of selling their property at a high price. They do not care a straw for the wretched tenants who occupy dwellings scarcely good enough for pigstyes; the middleman or house-jobber has an intermediate interest, and further precludes any outlay on improvements. We think, therefore, it is the duty of a local authority to compel the owners of insanitary premises to put them into a wholesome and habitable state, rather than that the cost of doing so should fall upon the ratepayers. The duty of an authority is primarily to enforce the obligations of landlords, and not to incur new responsibilities till they have tried the measures which the Act has placed in their hands. The landlords rather than the ratepayers should be taxed to pay for improvement schemes which their own neglect have rendered necessary in the cause of public health.

The report of the Committee on the Housing of the Working Classes indicates the difficulties which have to be encountered. The Committee have had to seek information from vestries and district boards as to insanitary areas in their districts, and these are not always forthcoming. In many instances those interested in the insanitary premises are members of local authorities, or are personal friends of members; in other cases, the authorities are said to be "averse to take action under Torrens' Acts, and with some justice, as superficial repairs to insanitary houses in a small court or area may be held sufficient by the justices to whom an appeal is made by the owner of the property, and thus little result is effected." The Committee, therefore, have made suggestions with the object of making Torrens' Acts more workable. They say that local authorities prefer an area, however small, being dealt with under Cross's Act, which necessitates full compensation and a scheme at the expense of the whole Metropolis; the Committee therefore believe if "Torrens' Acts were amended much could be done with the smaller insanitary areas of London." "They also suggest that, in order to put a local authority in motion, the Council should have the power of requiring the local medical officer to report; that in case of demolition the authority, or, failing it, the Council, should have the same powers of compulsory purchase as the Acts give with regard to obstructive buildings"—that is, those badly situated or obstructive to ventilation, and incapable of improvement.

We do not now discuss these recommendations, which have some weight, but the Acts known as Torrens' and Cross's have not worked satisfactorily. The procedure is dilatory and costly, the compensation given to owners of unhealthy houses has in many cases been in excess of the fair value for dilapidated properties, but, what is worse, these compensations give encouragement to owners of such premises to neglect their duties as landlords, and to allow the houses to fall into bad repair. It is true subsequent amendments made in 1879 and 1882 made the principle of compensation more reasonable. Owners were not to be compensated according to the profits they derived from these dwellings, but as houses "unfit for habitation." Again, the obligation to provide on the same area for the persons displaced compelled the late Board to sell at a low price the ground, which, with the houses on it, cost seven or eight times much. This was altered: the Board h power to sell the site of the unhealt dwellings for commercial purposes, and provide sites for the displaced dwellers other less expensive parts, a plan that ha however, the obvious disadvantage of taki the tenants away from their work, and destroying localities with monster bloc The Housing of the Working Classes A afterwards passed, amended the rules as the power of appeal from the arbitrat and simplified the operation. Notwit standing these improvements, somethi more is required before it can be said th the Acts work satisfactorily. One of t greatest difficulties is that of providing n dwelling accommodation to the same amou as that demolished. The Act of 1882 not compel the local authority to provide t same amount, and the obligation of t authority was reduced to provide half t number; but the fact is the new dwellin occupy more area than many of the ter ments in courts and alleys—on the oth hand, the new dwellings have more stories

Another and equally vital point is t mode of building. The County Coun following the example of the Metropolit Board of Works, intend to rebuild on t cleared sites model dwellings in large bloc as being the most economical way of utilisi the area of 15 acres. To this mode rebuilding, the inhabitants of Bethnal Gre as in every other case, offer an indigna protest. The meeting held the other d was unanimous in its opinion that t area should be covered with small six-room or "two-family houses" instead of t model dwellings in blocks. Wherever go we find strong objections raised amon the poorer classes to the monster block flats. It is a grievous eyesore in the mi of the East-end localities; too barrack-li or too prison-like to be popular amongst t working classes. The blocks are look upon with a sort of horror by those who ha lived comfortably in a couple of rooms in house of moderate size, though perhaps n in the most efficient sanitary state. Th people rebel against the regularity, the mi tary discipline, and even the cleanliness the regulation "block dwelling," not beca they are well built or clean, but because th lose a sense of individuality and of perso comfort which they enjoyed in their haunts. In the great block, up some fou or fifth flat, they become lost, separated fr their neighbours and acquaintances, isola from the world, and pigeon-holed under *régime* which is hateful to the Engl artisan. The evidence taken at commissio and the reports of the dwellings commit of the Charity Organisation Society, all co firm the fact that the classes for which th model dwellings are erected do not inha them. Labourers spend as little as possi in rent, and are often destructive of proper while the artisan prefers to have a sm house of his own. Association and Peabo Dwellings are disliked by both classes. Th are some reasons for the aversion ot than those we have given. The huge bl of flats by its height and ugliness reve itself as a regulation building for the po It represents the attempt to pack the wor ing classes in great buildings as a means removing them out of the way of super neighbourhoods, and the difference betwe the model dwelling and the small ho expresses the fact in a manner the worki classes resent. It has too much of the wor house look.

How is the problem to be met? On one hand the local authorities are acti under statute provisions to demolish u healthy houses, and rebuild them upon economical principle of placing as ma dwellings on the area as they can; on other, those who are chiefly interested decl to live in the "model blocks." We have

ong advocated the rebuilding of these sites th two or three family houses of six oms; but the objection is that this plan ould not be economical, and could not pay. at the plan has never been tried on a large ale. Wherever these six-roomed dwellings ve been erected, they have let to the asses for whom they are intended, whereas e model dwellings in blocks have only rtially been occupied by them. The great st of purchasing under the old Acts has mpelled associations and authorities to ild blocks of several stories. An enormous nount of money was given for the trade and nnection of low public-houses; tenants aving only short leases would demand metimes several years' trade profits. In is way sites and houses have been rchased which have cost three or four mes their fair value. The system of mpensation was grossly at fault; and in ne case a Great Wild-street area was ctually assessed under the arbitrator's ward at £3,500; which under the Cross's mending Act would only have been valued t £500. This was no solitary instance of the aluations made before the amendments ame into force in 1879, which Act enabled ne arbitrator to deduct in value the expense f abating the nuisance when the premises ere unhealthy or overcrowded. Under a ystem of exorbitant compensations for nhealthy property, we cannot wonder that romoters of schemes endeavoured to house s many as possible within a limited area. But now properties which have fallen into an nhealthy or overcrowded condition can be ealt with on a different basis of compensa- ion; the local authority, on the owner's eglect, can demolish, and compensate only or the value of land and houses unfit for abitation. In many cases only the land and naterials ought to be valued. These altered conditions as to compensation, and the dis- ensation of the obligation to re-accommo- late as many of the tenants as are displaced by the clearance of a site, have made it pos- ible to revert to a mode of rebuilding that will accommodate a large proportion of the nhoused classes without doing violence to heir prejudices. In Liverpool, Edinburgh, nd other towns self-contained houses for our or more families have been erected affording all the conveniences and sanitary conditions required.

THE ARCHITECTURAL ASSOCIATION.

THE REVISION OF RULES.

A BUSINESS MEETING of the Association was held on Friday evening, to consider the report of the special committee on the the revision of the rules, the substance of which we gave in our issue of a fortnight since, p. 778. The President, Mr. Leonard Stokes, occupied the chair, and there was a large attendance of members. During the preliminary ordinary meeting, P. Bantoft, T. J. Morgan, and A. H. Bamber were elected as members. Mr. Cole A. Adams inquired whether or not the *A. A. Notes* was the official organ of the Association, and whether the leading article in the December issue, entitled "Two Presidential Addresses" was an authorised expression of the views of the committee. The President replied to the first question "Yes," and as to the second, the article in question did not express the views of the committee, for that body did not see it till the publication of the journal. In reply to Mr. Max Clarke, the President added that Mr. F. T. Baggallay was solely responsible for the article. Mr. Clarke expressed his regret that it had appeared.

Mr. Hugh Stannus, as chairman of the special committee, explained that in revising the rules they had thought it advisable to divide them into two classes, a Constitution and By-laws, the latter of which ought to be more easily altered to suit changing circumstances. He moved, *pro formâ*, the adoption of Rule 1 of the Constitution, giving the name of the Association. This was seconded by Mr. Hampden W. Pratt, and agreed to. Rule 2, defining the objects of the Association, was also passed, on the motion of Messrs. Stannus and Baggallay, after Mr. C. H. Brodie had questioned the necessity for eliminating from the rule, as formerly standing, the words "to advance the profession" from its professed aims. Number 3, defining the Association as consisting of "ordinary members and allied societies" aroused more controversy. Mr. Owen Fleming wanted to know why no distinction was to be made between town and country members, and other speakers having questioned whether "allied societies" could be designated members, he moved that its consideration be deferred till other rules affecting affiliated bodies had been dealt with. This was seconded by Mr. Bernard Dicksee, and led to the first division, the postponement being carried by 44 votes to 8. The adoption of Rule 4, stating the qualification for membership, was moved by Messrs. Stannus and John Slater. Mr. Creswell moved, and Mr. Burrell seconded, that the word "ordinary" be inserted before "members" to distinguish them from "gentlemen interested in the arts or sciences associated" with architecture, who may be elected with the special sanction of the committee. Only three hands being held up for the amendment, it was lost. After a discussion, in which Messrs. E. R. Barrow, F. T. W. Goldsmith, G. A. Pryce-Cuxson, and Chas. M. Hudson took part, the rule was adopted with but four dissentients; the President explaining that legal advice would hereafter be taken on the construction of the rules before they were finally printed. To Rule 6, defining the rights of members, Mr. Stannus proposed to insert after "shall have . . . the right to vote" the words "and the ordinary annual subscription shall be half-a-guinea payable" before the clause, "as prescribed in the by-laws." Mr. Cole A. Adams expressed "the utmost amazement" that Mr. Stannus should have raised the question of the subscription at this point, and the President mentioned that the committee had given a similar suggestion by Mr. Stannus careful consideration, but could not see their way to adopt it. Messrs. Burrell, Baggallay, W. H. Atkin Berry, Slater, and Goldsmith having spoken, the amendment was withdrawn by Mr. Stannus, and the rule agreed to as printed. Rule 6, defining the qualification of allied societies, having been moved by Messrs. Stannus and E. W. Mountford, Mr. Cresswell suggested that the rule ought to define who should be members, or they might have tinkers and tailors offering to affiliate themselves with the Association. He moved the insertion of the words "architectural or kindred" before "societies." This was seconded by Mr. Pratt, and Messrs. Cole Adams, E. W. Wimperis, Percy Hunter, A. B. Pite, Barrow, Berry, Brodie, Burrell, and Hudson having spoken, the addition was carried on a division—the first alteration made in the committee's draft report. Mr. Burrell could not see why the distance of the head-quarters of allied societies had been increased by the committee from 20 to 30 miles, but the alteration was agreed to. Rule 7, defining the privileges of allied societies, was agreed to, as was also Rule 8, approving the management of the affairs of the Association by a committee. Rule 9, fixing the constitution of the committee, gave rise to more discussion, a strong feeling being manifested for placing before the secretaries the title "honorary," so as to insure that a paid official should not vote in committee. The President pointed out that all the members of the committee were honorary, from the president to the librarian, and that the paid assistant would be merely a paid clerk; but Messrs. Cresswell, Berry, Brodie, Dicksee, Hudson, Max Clarke, Wimperis, W. Leverton, Slater, Pryce-Cuxson, and Pratt having spoken, he moved from the chair that the rule commence: The committee shall consist of "the following honorary officers," the words quoted being additions. This was agreed to *nem. con.* In order to prevent "gentlemen interested in the arts or sciences"—*i.e.*, amateurs, eligible for election under the much-debated Rule 4—from being placed on the committee, Messrs. Burrell and Fleming proposed to restrict qualification for the committee in Rule 10 to "ordinary members"; but the proposal was objected to by Mr. Pite and others, and was withdrawn. Rule 11, relating to meetings, having been agreed to, Mr. Stannus moved an additional rule, so as to render it less easy to amend the Constitution: "That the Constitution of the Association should be only altered or amended by vote taken by means of voting-papers sent to all members as prescribed by the by-laws." This proposal, raising as it did the question of the mode of voting, was energetically opposed by Mr. Cole Adams, who appealed to the members to adhere to the English mode of open voting in public meeting assembled, and said if votes were to be sent by post, each member ought, in fairness to those who attended the meeting, to have a verbatim report of the discussion. Mr. Dicksee seconded Mr. Stannus's motion, which was supported by Messrs. Brodie, Harry Sirr, Hudson, Goldsmith, Pryce, and R. Needham Wilson, the last speaker urging that it was only fair to country members to give them equal facilities to town men. Mr. R. Phené Spiers proposed as an amendment that the words be added to the new rule, that no alteration be made in the Constitution unless approved by "a majority of two-thirds of those voting." This was seconded by Mr. T. E. Pryce, and supported by Mr. Pite; but on being put to the meeting was lost by a large majority, and Mr. Stannus's new rule was adopted with but one dissentient. Mr. Stannus proposed, as a further addition to the Constitution, a new rule, fixing the subscription of present members at half a guinea; but it being now ten o'clock, Mr. Fleming moved, and Mr. Dicksee seconded, the adjournment of the discussion. This was carried, and the meeting accordingly stands adjourned for a week—*i.e.*, until this (Friday) evening at 7 o'clock, when Rule 3 and the whole of the by-laws—39 in number—come up for consideration.

SUGGESTIVE POINTS OF CONTACT BETWEEN ARCHITECTURE AND PAINTING.*

(*Concluded from page* 816.)

THERE is a minor principle which is closely associated with breadth which may perhaps be briefly referred to. Most artists have no definite name for it, but amongst some it is known as "focusing." In most objects in nature there is a tendency towards gradation, either in tone or colour, and towards the emphasis of some part or point above the rest. Observation will soon show this, and the more the eye is trained to look for it, the more it will be apparent. In atmost all groups of foliage, for example, there is some particular spray or group of leaves on which shadow, colour, or light culminates in intensity. Even such a straggling object as a mass of clematis usually has some particular trail which asserts itself over the others. Paint the group of foliage or the bush of clematis without this gradation and binding together by the supremacy of the individual trail or spray, and it looks confused and lifeless and unsatisfactory. Examine the works of many of the old masters and the best men of the modern schools, and you will usually find that, consciously or unconsciously, the painter frequently binds together a group of objects by making one of them assert its supremacy and the other their loyal submission to it. Apply this to architecture, and it will be found that when a patch of ornamental detail will not work itself out harmoniously, a little "focusing" upon some particular feature, by means of the extra elevation, deeper undercutting, more forcible treatment or emphasis through strength or contrast of colour, may assist the designer out of his difficulties. Before passing on to a larger subject, let me add a word or two as to "quantities." Of course I do not mean the kind of quantities with which an architect is most wearisomely familiar, but the "quantities" of the painter. What the latter understands by the term are the large masses of tone which compose a picture or a subject in nature. The question of the relative size and relative position of these is one of considerable importance for him in the composition, or, to use a word which will less offend the susceptibilities, the selection of the materials for his picture. In this matter there are no firm rocks upon which he can place his feet and feel that he is æsthetically safe; but there are one or two points in connection with quantities upon which there is tolerable agreement amongst artists. One is that neither the size nor the form of any two such prominent masses or quantities in a picture should be exactly equal. To give a very simple instance, I do not suppose that Mr. Colin Hunter or Mr. Henry Moore would divide one of their seascapes into two precisely equal spaces of sky and water by an horizon line exactly intersecting the picture, nor in a figure subject would two

* A paper read before the Society of Architects, Dec. 9, 1890, by A. Wallace Rimington, R.P.E.Assoc S.A.

figures, or two groups of figures, be allowed to occupy the same amount of space on the canvas. Another generally accepted canon, also obtained from nature, and one so obvious to the painter as to be hardly worth referring to, is that two quantities of somewhat similar shape should not be immediately below each other, or on the same horizontal line; though when placed upon a diagonal line they do not seem to offend the eye so much. It will not do to project the shadow of these two small artistic dogmas too strongly upon the principles of architectural design, because perspective complicates the question; but most artists, and perhaps the art-educated portion of the public, would have a preference for the façade of a building in which the quantities relieved against the sky were varied and not uniformly balanced. Few architects also would deliberately place two features of equal size and form immediately above one another. The adjustment of relative quantities has been carefully considered by various painters, who have attempted to throw some light upon the natural or optical principles which may be supposed to lie behind the question. But it would be dangerous to attempt to tie art down by hard-and-fast canons. These artistic principles should be helps to assist us in exploring nature's intricacies, and not inflexible rules; servants, and not masters. Moreover, there is always an ultimate court of appeal in art, a court in which individual taste is the judge, though it would be well for art if his judgment were more free from the influences of fashion. Let us turn to a somewhat kindred subject, to a factor in any art work which, though it can hardly be called a principle, cannot be neglected, and which it would, perhaps, be well to recognise the existence of a little more definitely. That factor is what, for want of a better word, can only be described as "feeling." When an artist remarks that a sketch is "full of feeling," he means that in some way or other, even perhaps with the sacrifice of some other truths, the maker of the sketch has been so diligently or enthusiastically feeling after the essential qualities of the object he has drawn, that his sketch is full of a certain indefinable suggestiveness of truth and delicacy of perception. In a dozen other cases it might be said "very careful, very dashing, and very clever in handling, but without an atom of feeling." The difference in the drawing of a tree stem, or a hand, with and without feeling, is extremely small, and the quality of feeling is often arrived at in despite of a certain indirectness and confusion. It may lie in the thickness of a line or the general effect of a confused net of lines, or in the expression of a curvature so subtle that a mathematical instrument would hardly detect it. Yet in work which is instinct with feeling this difference tells, and there would be no life without it. Feeling, then, does not consist in mere fineness or carefulness of drawing. It consists much more in the suggestion of the most beautiful or the most important facts, and in the not being satisfied with anything else. Feeling in art is a quality which must be felt rather than described. But, as in the painter's work, its absence is absolutely ruinous, so in architecture its presence is not less needed to produce a building, or a piece of decoration which shall be truly an art work. As an instance, Mr. Rimington exhibited a diagram showing the general forms of a Mediæval crocket on the exterior of a cathedral in Southern Europe, and side by side with it a drawing of a similar crocket as restored by a leading architect who has executed several admirable buildings. In this case, however, the subtlety and beauty of the old work has, the lecturer thought, to a great extent escaped him—an opinion confirmed by the general view of the audience. The difference is not, the author added, great, but if the designer had been on his guard against absence of feeling creeping into his work, he would not have missed the subtle but deliberate curvature of these lines (it is not due to the weather wear) and have converted them into ones suggestive of machine-made ornament. It is this subtle and indescribable quality of feeling which stamps so many works with individuality and gives them so high an art value. Broadly speaking, it is what most divides an original style from an imitated one. The absence of "feeling" in the execution of the architect's design often destroys all its charm, and, like the painter, he cannot too ardently seek after it, or insist too strongly on its being striven for in the execution of his drawings by the craftsmen. Closely associated with "feeling" is the quality of suggestiveness. Suggestiveness in painting means that a given piece of work prompts the mind to imagine more than is actually rendered. The bas-reliefs beneath the dark porches of some great Italian church, say the cathedral at Lucca, are not clearly visible at a short distance. An artist who is fairly skilful will suggest them with a few touches, and they will give richness and interest in his drawing, as they do in nature. There is a charm about this suggestiveness in that it leaves the imagination to some extent free. A bad artist, to revert to the example of the Lucca porch, would deliberately paint more than he could actually see, by moving his position and going closer; but in doing so he would get a hard, matter of fact character into his drawing, and destroy its suggestive poetry. A painting that is highly finished in every part is rarely suggestive, and seldom satisfactory as a work of art. So, too, that architectural ornament which is in every respect highly finished and cleanly tooled and scraped has, in getting rid of all suggestiveness, lost much of its charm. In a newly restored cathedral the artist often longs to put a little more inequality and roughness in the cleanly sculptured capitals, and sharp-edged wall tracery; or to introduce a little vague irregularity of surface and suggestiveness of age and interest in the monotonously clean walls behind the triforium arches, or below the clerestory. It will be said, perhaps, that this kind of suggestiveness did not exist in the original building. If so, and it has gained it by time, why should we not take a hint from the fact? But it is indisputable that much old work does distinctly show a feeling for this quality of suggestiveness, by the deliberate leaving of parts of the ornament in a rough and suggestive condition, and the absence of monotonously equal finish. In the undercutting and hollowing out of much 13th-century work in France and Germany, and occasionally in Italy, may be noticed the intentional, or apparently intentional, leaving of roughness and coarse inequalities, which at a little distance give poetry and suggestive richness. In the earlier mosaics it is deliberately intentional, and so, too, in the bas-reliefs of Lucca Della Robbia. In fact, in good mosaics it is questionable whether this broken suggestiveness is not one of its greatest charms, apart from its giving quality to the colour. Or, to take another instance, in the flat surface, carved furniture of Gothic and Early Renaissance times in Southern Germany and parts of Alpine Italy, the chiselled surface upon which the design is relieved is almost invariably left as rough as possible, in order to prevent uniform cleanness, to give suggestiveness, and to make the finish that exists more valuable. Total absence of suggestiveness in a painting, that is to say, omission to leave any part of it sufficiently undefined to appeal to the imagination, is singularly destructive of scale. May not this, perhaps, also be the case sometimes in architecture? Reference may be made to one or two minor and somewhat commonplace painters' axioms. One is as to grouping. Most painters feel that in introducing movable objects, such as figures or animals, into their pictures, or in choosing a position to draw a number of stationary ones, such as trees, or buildings, it is well that they should assemble themselves into groups, and not be dotted about the canvas in an altogether haphazard and irresponsible way. In introducing a figure into a landscape, it is usually a question whether it shall group with some other object in the subject, and, as in the black and white of a picture, it is well to keep the lights somewhat together, and the darks also in company, so it is found advisable to allow the objects of interest to arrange themselves in groups. A similar principle is, of course, well recognised by the architect in giving coherence to his ornament, and preventing the external features of his building from becoming too scattered and disunited. Grouping suggests the action of the will, controlling and overruling mere accident; isolated and monotonous repetition implies feebleness of mind and intention. In a good design the elimination of a single decorative feature should be felt to be a loss. If it is not, it does not group; it is cutting the design up and reducing its impressiveness. So, too, in a picture, and various hints may be obtained from the study of pictures in which the grouping is especially good. Symmetry is, perhaps, a subject upon which the artist is necessarily somewhat at issue with the architect. The painter has a strong objection to absolute or geometric symmetry. The same motives that lead him to reject equal quantiti and groups of similar magnitude cause him prefer the kind of symmetry which is so w exemplified in Japanese art, in which exampl of equally balanced design are very rare. Fe who have studied it will deny that this is one its many charms. Though the eye finds repos the mind is not lulled to sleep by mere repet tion, but is forced to take an interest each part of the decorative composition. The is little of the dead and meaningless ornamer which often distresses us in other schools design. So also in a good painter's work, equ balance is seldom or never found. Instinctivel or of set purpose the artist shifts his position s as to get unequal quantities; he will balance whole mass of darks on one side of his picture by mere spot on the other, or will control a whol system of leading lines by a single opposing one If this is so deeply rooted a principle or prejudic in pictorial art, it is but natural to expect to fin something similar in architectural practice, an this is the case. Even in the severest forms o Greek art absolute symmetry was felt to be defect, as has been pointed out by Fergusson wit regard to the temples and other buildings of th Acropolis. As for Gothic art, hardly a building is to be found in which absolute geometric sym metry exists, though a careless observer is ofte deceived into thinking that it does. In drawing of the towers of Tours Cathedral, hasty glance would lead one to suppose that th towers were exactly similar, but if they ar examined they will be found to differ in almos every single particular, only a general similarity of form being retained. This is more a questio of detail and not of main forms. But take one or two examples from domestic architecture, fo instance, the Chateau de Pierrefonds in France, or Castle Fraser, or Craigievar in Scotland, each of them representative buildings of their kind. In all these geometric balance is not adhered to, or it has been deliberately abandoned for something better. We might appeal to countless other instances showing how strongly the mediæval men were opposed to absolute uniformity and equal balance. It was left to the later Renaissance periods to override this natural desire for a certain freedom and variety of treatment in different parts of a building, and to substitute for it a hard and heartless uniformity. The development of this uniformity led almost necessarily to the hideous structures of the end of the 18th and the beginning of the present century, and the consequent destruction of public interest in architecture. In modern French Renaissance, the present-day European style, as it has been termed, it is a canon, that everything should be carefully balanced on a centre line, with, if possible, exact re-duplication of parts; but how delightful to turn from the wearisomeness of the modern French villa, with its ostentation and its pompous falsities of construction, to the English country house of the last 20 or 30 years, or of earlier periods, full of delightful variety and play of invention. The author closed with some remarks on the principle of economy of means. It is the fashion of the day among artists, and the public, to attach an enormous, perhaps an exaggerated, value to what is termed directness and cleverness of "handling" in painting. So far is this the case, that, to some painters, a picture is good or bad according to whether its brushwork is skilful or the reverse. It may be uninteresting in subject, coarse and commonplace in black and white, even more or less offensive in colour, but if its author has fulfilled this one condition of skilfulness of handling, it is, for those we are refering to, a work of art. Now the majority of painters of all countries and of all time are very far from agreeing with this exaggerated view of the matter, but a certain very valuable truth does certainly underlie it, which should not be disparaged. It is the double truth that a good workman should know how to use his tools to the best advantage, and that effect in art of whatever kind should be obtained with careful economy of means. There is moreover, so great a charm about crisp and masterly handling, that the undue exaggeration of its importance is easy to understand. But the underrating of the principle in the past, the poor weak handling which has injured the work of many otherwise great painters, and a simultaneous loss of feeling for the greater qualities and higher aims of art, has led to a reaction and to such an over-statement of the case for "handling," that the skilful spreader of paint almost ousts the artist. If, in painting, economy of means is so

extremely important as to lead to such a reaction in its favour, it may perhaps also be worth while to see whether no parallel to the principle can be found in architecture. Is it not probable that much of the noble and impressive effect of many buildings is due to the economy of means which lies behind their seeming elaborateness—no detail inserted but what fulfils the double object of giving interest near at hand, expressing the construction, and giving richness and power of effect at a distance, no frittering away of opportunities of enrichment in poor and shallow, or in too projecting and overcharged, ornamentation? How many mouldings would be improved by the omission of some of their members? How much ornament is wasted in positions where it is perfectly ineffective? How much time is thrown away upon trivial elaboration, which might have been spent in getting the general forms and details more full of "feeling," and more harmonious in proportion? The architect paints almost as surely with light and shade in his ornament as does the painter in his picture. May it not be well for him to devote the same care to the consideration of the directness and force of his handling as do many painters? Economy of means in pictorial art is not limited to handling with the brush, or the pen; the pencil or the etching needle. It applies quite as much to expression of form and use of colour. A great writer on art goes so far as to say that there is not one speck of superfluous colour in a really great work of art. Be this as it may, it is quite clear that it is easy to ruin a picture by the addition of a single spot of colour in the wrong place. So, too, with regard to form. The over making-out of form is as offensive in a picture as it is untrue. In her most beautiful effects nature usually defines her form with extreme economy, she detaches them here and there with great sharpness and force from their surroundings, but she models them with tones which differ very slightly from each other, and suggests the infinity of creation by leaving parts of them mysterious and undefined. Figuratively speaking, nature teaches the artist the value of economy of means. Without good architecture painting can hardly live. How shall we expect men's appreciation of painting to be deep or vital if the desire for beauty and interest is perpetually blunted by the deadly monotony, or the degrading hideousness of the buildings by which they are surrounded. The great work of making our eyes sensitive to form, and to poetry of surroundings, must ever fall to architecture. How hopeless is it for pictorial art to preach beauty, if at every turn in our towns and cities the need for it is insolently denied. Buildings are ever present, whereas pictures and statues are not. Buildings are, as it were, the national costume of social life. We live in them and amongst them, and cannot escape from their artistic, or anti-artistic, influence. These facts are a close tie between the two arts, and when it is remembered how similar are their aims and ideals, it would seem but reasonable also, that there should be some points of contact between their artistic methods and working principles. Some may say that I have made these points of contact too important, others that I have not traced them far enough; but most will agree that whether you, as architects, can or cannot afford to take a few hints from painting, we, as painters, have, at least, much and lasting cause to be grateful to architecture.

DECORATIVE PLASTER-WORK.

At the Royal Institute of British Architects, on Monday evening, a new departure was made in the first of a series of meetings to be held under the management of the Art Standing Committee for the discussion and illustration of new and revived decorative processes as applied to architectural details. The chair was occupied by the President, Mr. Alfred Waterhouse, R.A., and, despite the inclemency of the evening, the room was crowded. The subject for consideration was "Decorative Plaster-Work," and in addition to four short addresses, a corner of the room was fitted up with a platform, with ceiling above, on which Messrs. Whitcombe and Priestley gave throughout the evening a practical demonstration of the method of working in plaster, which was watched with manifest interest. On the walls and table were shown cartoons of Æsop's fables and panels by Mr. Walter Crane, and photographs of plaster-work and panels by Mr. Walter Smith.

Mr. Edward S. Prior, M.A., in the first paper read, entitled "Design in Plaster," said the material had its own special capabilities and limitations, and if the architect transgressed those limits in his design, the practical worker must, in his interpretation, so modify the idea shown as in effect to re-design the whole scheme himself. Architects were therefore driven to the study of first principles. Unfortunately, the design was, as a rule, left to be interpreted by the plasterer, and it was little wonder how ineffective some of the paper designs by architects were. It was not surprising that some questioned whether the professional man should design the plaster-work at all—it was so much easier to leave the "firm" to do it all. Some would say, let our architects renounce plaster decoration till they learned to design their own work, and so be above all commercial art. This was, however, unpractical, for commercial art was the art of the day. In endeavouring to design, they should first of all bear in mind that plaster was the most impressionable of all materials which lent themselves to the artist's purpose. It did not need to be chiselled like marble or hammered like metal, but the touch of the finger gave it life. Mr. Prior referred, in passing, to the many fine examples of old plaster to be seen in this country, including the vigorous work on the street-fronts of the Ancient House at Ipswich and on Speke Hall, the delicate ceilings and friezes by the Brothers Adam, and the bold staircase ceiling at Ashburnham House, Westminster. Where plaster was employed as a surface for painting upon, its chief recommendation and virtue were its faculty of self-effacement, and half-way between plaster-work proper and decoration came sgraffito. He referred to the eminently satisfactory surface presented by the plaster-work of two centuries ago, and proceeded to urge that, in designing in plaster, the artist must be careful that he had something to express; if not, the work, however elaborately treated, would but show up his emptiness. Sincerity was the chief quality that the designer in plaster needed, and he would do best to go direct to Nature herself to study, provided that he possessed the great gift of selection. The face of plaster presented a clearer field than did any other material for free architectonic effect, there being no joints or breaks to restrict the designer. If the art of designing in plaster was to progress, the architect must not remain dissociated from the crafts, but must take his place beside the craftsman as a fellow artist on the building.

"Stucco Duro, or Modelling in Plaster," was the title of a second paper read by Mr. G. T. Robinson, who confined himself chiefly to an historical *résumé* of the carbonate of lime processes. The recipe given by Vitruvius was still the best given; he recommended that the lime be of the best quality, and tempered a long time before use, and that there be three coats of sand and three of marble dust, so as to render the walls solid. Reference was made to the great revival of the art of working in stucco, which took place in this country in the 15th century, and somewhat later in Italy, where the opening of the Baths of Caracalla by Leo X. in 1515 led to the making of numerous experiments. The work executed by Bramanto Lazzari for Raffaelle, consisting of plaster cast in moulds and set on brickwork, was referred to, and also the work by Giulio Romano, Udino, Primaticcio at Mantua, and others, and the work done by Italian artists for Henry VIII. at Nonsuch Palace, now utterly destroyed, were described in detail. The steady influx of Italian workmen into England continued till almost the closing years of the 18th century. The workmen were being trained up by the Departmental Schools of Art, and for its success the revival of hard stucco only needed the willingness of the architect to put on the blouse and cap of the workman, and associate himself with the craftsman in executing the works.

Mr. Heywood Sumner delivered an address on "The Methods of Sgraffito as Applied to Plaster Decoration." Sgraffito was, he explained, quite the simplest form of all plaster decoration, being merely, as the name implied, the scratching off before it had quite set of portions of a surface of a coat of one colour, and overlaying another colour, so as to reveal a design. The lowest form of the art was seen in the making of false joints in a stuccoed wall surface. In sgraffito the artist need not restrict himself to two colours, but could introduce many tints into the surface to be exposed. An example of this was shown in a sgraffito panel, on which a saint's head with aureole was treated polychromatically. Proceeding to describe the process itself, Mr. Sumner explained that a panel to be treated in sgraffito must have the surface well coated with a composition of one of Portland cement to three of sand. On this coarse coat should be laid the colour coat, or patches of colours proposed to be brought out, and of these the composition would be one of Portland cement to one of sharp sand, with one of colour. When this had set for three days or so, it would be ready for the cartoon. On this cartoon the design was drawn, and the outline pricked out by minute holes. The cartoon was laid on it gently and dusted with a pounce-bag, so that the powder passed through the prick holes on to the panel. One could work in two or three colours, if necessary. The assistant plasterer then followed on, and filled up all the space, registers or pins being provided so as to insure that the cartoon should fit in exactly the same place each time it was laid on. The surface or finishing coat was then added. This consisted either of Parian cement, or of 1 of selenitic cement and 1 of Aberthaw lime, or of 1 of selenitic cement and ½ of silver-sand. The cartoon was then again put on and pressed, extreme care being taken where several colours were used below to keep the registers true. While the surface was setting, the surface was cut through at the required places with a set of very simple tools, procurable at Buck's. The more delicate parts were removed by the artist himself, the wider spaces being left to the assistant. As the material was continuing to set it became increasingly difficult to remove, and after the first two or three hours it was quite firm. Mr. Sumner and his assistant gave a practical illustration of the process of removal, the completed panel, a hart reclining within a trefoiled (heartsease) border, being received with continuous applause.

The last paper read was by Mr. Stephen Webb, the subject being "The Proper Treatment of Modelled Work for Plaster as Applied to Ceilings and Friezes." The author remarked that one of the most serious difficulties of the architectural modeller in plaster was that of scale. He must acquire the faculty of seeing his work, not on the easel, but in the situation that it was intended to beautify. This question of scale, or proportion, was of the essence of the problem. The advantage of executing plaster-work in the space it was to occupy was, therefore, obvious; but the practice had its disadvantages—the awkward position on the scaffolding and the numerous draughts in rooms in which the windows had seldom been fitted. It was consequently desirable that the designer should see his work mentally from the first in the place it was designed to fill. If the architect had confidence in his modeller, he first set to work to divide his design—say, for a frieze—into spaces for repetition, endeavouring to bring the large divisions into the angles and other interruptions. The next point was to consider the scale. This was partly fixed by the work itself and partly by the angle at which it was to be viewed. In a strong light it was necessary to avoid high relief, especially in the vertical lines, as these would show most distinctly. Especial care should be taken in any employment of the human figure, as any mistake was readily detected and always disastrous to the effect of the composition. There should also always be a motive for the introduction of the human figure, and this increased the difficulty of dealing with it. As to the decoration of a ceiling, a well-known living painter said in his hearing that this was wrong in principle; for, in the first place, no one would look at it; and in the second place, that if they did look at it, the function of the ceiling—to reflect back the light—would be destroyed. He differed entirely from this, believing that it added to the finish of a room; but the ceiling decorator should bear in mind that only a part of his work could usually be viewed at one time. He must also remember that while the ceiling must be in keeping with the other decoration, resort could not be had to raising the surface or marking the edge, or similar devices. Nothing, he thought, gave such completeness to a room as a well-decorated ceiling; but it should never be self-assertive. Nowhere were reticence and self-repression s necessary. Assuming that it would probably be examined most often by persons occupying an easy-chair, the treatment should be quiet and reposeful. No more shade should be introduced than was absolutely necessary, and much repetition was fatiguing in large surfaces. Speaking

for himself, he had never invented any texture. He believed that if the design was satisfactory, the texture of the surface could be left to itself. Besides working up the surface-texture, another fruitful source of waste of time was the endeavour to give the work the impress of some other man's manner. A man's peculiarities of manner had no sort of artistic or educational value, and it was but pitiful fooling to try to copy them. This manner belonged to an individual as much as did his face, and we might as well take a liberty with the one as with the other.

Mr. J. D. Sedding, chairman of the Arts Standing Committee, remarked that the art of modelling was one that all architects ought to possess, and, owing to the varied tastes of his assistants, his own office was just now, he was pleased to notice, like a workshop. He trusted one of the younger men would strive to gain experience in plaster-work. He was glad to hear it recognised that men ought to design in Renaissance, as well as in Gothic, for architects ought to go forward with open and receptive minds.

Mr. Basil Champneys was glad to see plaster-work brought forward, as the craft had been too much neglected by the profession and the public hitherto. Such séances as the one at which they were assisting that evening must do good, as they fixed attention on the subject.

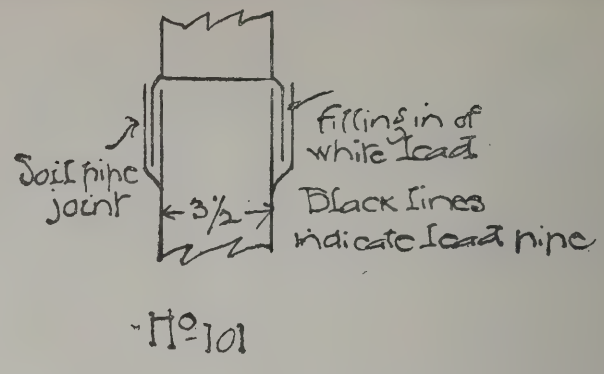
Mr. George Simmons feared that polychromatic treatment of sgraffito such as the first panel Mr. Sumner had exhibited, was rather transgressing the limits of the proper use of the process. Where white lines were subsequently laid on the outlines, the work must be extremely fragile. The word "repeat" was one he detested in connection with designs; the curse of decorative plaster work was its repetition. In a large room in Harrington-gardens he saw a ceiling with a decorative treatment so pronounced that you could not help looking at it. In a few moments one saw the same little fat boy was kicking up his heels in every direction, and the effect became wearisome. The reason was the public demanded a great effect in decoration at very little cost. In some exhibits in that room all the rules were set at defiance, the planes being disintegrated. In other cases there was a great lack of reticence, and the subjects on the cartoons were spread over the surface in a manner that would be destructive to effect in a panel. He agreed with several of the readers of papers that anything which would bring sculptors and architects into more direct contact would be beneficial to both.

Prof. G. Aitchison, A.R.A., differed from the theory referred to by Mr. Robinson, and which he had heard advanced by Mr. Brett, that ceilings should not be decorated. The idea was utterly erroneous, for nothing gave a room so good a finish as a well-modelled ceiling. To those who had visited Italy, a vast expanse of white ceiling in a room looked as if the occupier had expended all his means before reaching that surface. One of the most important things to consider in designing ceiling treatment was the position of the light. He was surprised to hear Mr. Sumner advocate going directly to Nature for his subjects, for it was surely safer to follow the modifications suggested by the experiences of past ages than to endeavour to deal directly with natural objects. The danger was that, except in the most experienced hands, such work would be either flabby or wiredrawn. Every great artist had gone to Nature, but he always modified it to suit his purpose.

Mr. Ralph Nevill, F.S.A., referred to the effective use in the stone district of Gloucestershire of cast plaster ornament on the stuccoed surface of external stonework. Repetition in ceiling and friezes should be employed as little as possible, a good plan being to combine a certain amount of handwork with patterns. He would say, Do not copy from Nature directly, but modify the treatment in consonance with what was done by older workers.

Mr. Cates moved a vote of thanks to the readers of the papers, to the "silent talkers on the scaffolding" (Messrs. Whitcombe and Priestley), and to Messrs. Sedding and Pite, the chairman and secretary of the Art Committee. This was seconded by Prof. Banister Fletcher.

In replying on behalf of the readers of papers, Mr. Sumner explained that he exhibited the sgraffito panel in polychrome not as an example to be followed, but merely as a specimen of the range of colours obtainable. Mr. Priestley also acknowledged the vote, explaining that the ceiling he and his partner were reproducing was one designed by Mr. Norman Shaw for a house in Queen's-gate; it was elliptical, 14ft. by 18ft. The surface was of lime plaster and Portland cement pricked up, the advantage of having Portland for the keying material being that the ornament could be added at any time after completion, even six months later, by simply wetting it.



No 101

CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—XXI.

By Banister Fletcher, Jun., A.R.I.B.A.

THE PAVILIONS OF THE VILLE DE PARIS.

Of the two pavilions erected by the Ville de Paris (which have been described under the Champ de Mars Pavilion) which stand symmetrically on each side of the central axis on the Champ de Mars, the easternmost one is of the greatest interest to architects, showing the progress made by the Ville de Paris during the last ten years in the construction of schools, the forming of new thoroughfares, the perfection of the drainage system, and finishing with the great architectural work, the completion of the Sorbonne.

Entering from the south, the first thing we notice are the two erections representing a "maison salubre" and a "maison insalubre." The "maison salubre" is very interesting to architects as being a perfect French house with respect to drainage, ventilation, lighting, water supply, &c. Commencing on the second floor, we notice that one of the rooms (each floor has two rooms, a w.c., and staircase) is lighted with gas on the Wenham principle, let down from the ceiling, the foul air from the gas being led by a duct into a chimney-flue.

In the same room the stove shows that "L'air nécessaire à la combustion est pris au dehors par un conduit ménagé dans l'épaisseur du plancher." It would have been better to have supplied the fire with air direct from the outside; but the fireplace is not situated in an outside wall. This system, which is also adopted in England, they tell us "active le tirage" (quickens the draught); but it also does more—it prevents draughts in the room, and is better in every respect than supplying the fire from the air in the room. In the next room is a "lavabo," with waste-pipe ventilated; but it does not discharge into an open head as it should do.

One of the rooms on the first floor is fitted up as a bathroom, and the principle insisted on by various inscriptions on the walls is that the walls and floor should be covered with a hard, non-porous substance: for this purpose several forms of tiles are shown, and enamelled slate (*revêtement en ardoise emaillée*) is also suggested. The bath itself is an improvement on the ordinary "cased" bath (which is an abomination, as it leaves dark places for the collection of dust); there are no casings, every part of the bath being exposed to view. It is placed on a raised step with a standing-place for the bather, which is drained. The bath is fitted with overflow-pipe branched into the waste-pipe, which is provided with a siphon trap ventilated on its outer side. The waste, however, does not discharge into an open head, as it should do, but is taken direct into a down-pipe. All the pipes are uncovered, and the stop-cocks (robinets d'arrêt) visible and easily got at. The overflow to bath empties into an open channel running along under the length of the bath, and discharges into the open air with a flap at the end. The floor of the bath-room is finished with a hard layer of cement and with a fall towards this channel, which is an improvement on the ordinary wooden. Everything is indicated very plainly, the pipes being coloured as follows:—Cold-water pipes are blue; hot-water pipes, white; ventilation-pipes, green; waste pipes, yellow.

In the room next the bath is a mica-trap ventilator for the exhaustion of foul air at the top of the room, which I doubt whether it would act, as it is placed in the outer wall, and not in the chimney-breast.

Several kinds of sanitary papers are given, and you are told quite rightly to avoid papers containing arsenic, &c. An electric light is given, which you are told quaintly "ne dégage ni chaleur, ni gaz délétères, n'absorbe pas d'oxygène." The same room is laid with oak parquet and iron tongues, which is recommended in consequence of being easily *démontable* if it is necessary to get to gas-pipes, &c.

In the hall by this room is a draw-off tap (poste d'eau) fitted with a siphon trap, and by the side are sections of the joints of pipes at different angles of junction, showing the "wiping" of the joints, which is, of course, perfect.

The w.c. on first floor is fitted with a combination-seat, as in England, to use as urinal, slop sink, &c. The soil-pipes are in lead, and a small supply-cistern is fitted above. The w.c. is made in porcelain in one piece, with trap ventilated by a small pipe running up inside the house (it would be preferable to have it outside). The supply-cistern gives a discharge of 10 litres, or 2½gals. The vertical soil-pipe is 9 centimètres, or 3½in. diameter.

The joint between the porcelain trap and the lead-coil pipe is made in white lead (it ought also to be cauked with tow, and be covered with a strong indiarubber covering band). The great lesson instilled is that the stop-cocks to all the supplies are visible and accessible, in order to be turned off if a leakage occurs.

The ground floor contains a court, and from this entered the servants' w.c., which has no seat, but is provided a standing place, all being made in glazed porcelain. The inspection chamber (*regard de visite*) is reached from this court, and is in half-pipes, with cement bottom, rising to the inclosing walls at an angle of 60°. The jointing to the vertical soil-pipe is as following sketch (No. 101), and makes a capital joint:—

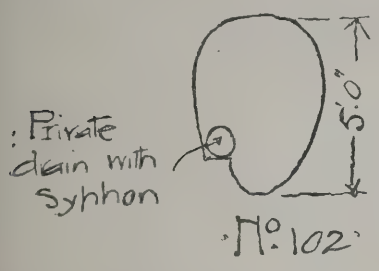
The bath, &c., waste-pipes discharge into a gully just below the ground level and between two movable gratings, whose bars are placed in an opposite direction to prevent anything getting in and blocking up the horizontal drain

The scullery has a tiled floor sloped to a channel, which empties itself into a gully to admit of the place being thoroughly cleaned down occasionally, "à grande eau." This is a very good idea, and one which ought to be more generally followed in England.

There are also shown three lavatory basins emptying into the same waste, each siphon ventilated into a vent-pipe common to the three basins. Some well-executed joints are also shown.

Basement.—The drainage system in the basement is interesting, and in many respects differs, and is superior to the English system. The method is as follows:—The house drain, running into the public sewer, is not covered up, but is placed at the side of the egg-shaped section walking-way, 5ft. high, which runs from the basement to the main sewer (No. 102). This is called the "conduite d'évacuation," and at the point where it leaves the basement are placed the compteur (meter) for gas, ditto for river water, ditto for spring water, with stop-cocks to all the supplies to the house for cutting off water, &c., and the ventilation to the house-drain is

carried up at this point. The top to the siphon to the house-drain unscrews (as in England), in order to clean out or in case of stoppage. This is a most perfect system of arrangement, for in order to get to the drain to examine there is no



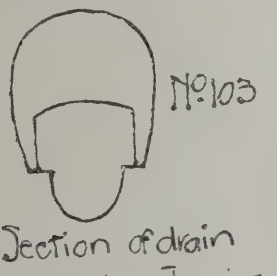
cutting away required. All can be got at from this point, entered from the cellar.

This is exceedingly well shown, everything being life-size.

Outside the "maison salubre" the house-drain and "conduite d'évacuation" described above are shown running into a public drain, of the type known to the Paris municipal engineers as "No. 12 bis" with channel and footway at the side (carmeau et banquette). This drain is 7ft. 6in. high. At one end of this public drain is shown the "reservoir de chasse" (flushing tank) which empties itself at intervals. The hand-cock for shutting off the water is also shown, and the inclosing wall to the private drain. Also the supply-pipe for spring water and for river water, which are always exposed in case of a leakage, and which run at the top of the "conduite" leaving the house, one on each side. A grating is shown at the bottom of the "conduite" to prevent anything getting into the house-drain.

The "maison insalubre" need not be described. Paris itself contains several of this class, for the Parisian drainage is far from perfect, especially in the old quarters of the town. There are, in fact, three drainage systems in Paris: (*a*) Cesspools; (*b*) tinettes (or iron containers, emptied periodically—these are very general); (*c*) the system of "tout à l'égout," which is the English system, and which is only used in certain quarters of Paris.

The "Maison Insalubre" contains several methods of sanitation by M. Le Perdrieux, and there are models of everything insanitary, and some old D-traps are shown, and badly-jointed pipes. The two houses are well-arranged to show the "masses" what to do in the matter of



sanitation, and ought to teach the French people valuable lessons.

There are also large diagrams of healthy and unhealthy houses. Plans, books, sections of different kinds of drains follow, some showing the method of running the "cleaning engine" along the drain on rails made for the purpose, which has an underneath part to the shape of the bottom of the drain, thus cleansing it.

A drawing of the public entrance to the drains in the Place du Châtelet is also shown, and I should advise every one when visiting Paris to "do" the sewers.

The different forms of Paris sewers all take after the egg-shape section; they contain two supply pipes for water, which are hung from above (one from river water, the other from spring water).

The plan of the Paris sewer system is quite a study in itself.

I noticed that the junction of the lead water supply pipe with the main iron service pipe was formed by iron bands, with reverse screws clipping the two tightly. The walking way from the drain to the "maison salubre" is 18in. wide (No. 104), and runs along one side only. Plans



of the Paris drainage system in 1837, 1854, and 1878 are given, and show the enormous increase that has taken place.

The interesting collection of paintings of old and new Paris are given, and a model to 0·02c. to the mètre of the famous "Carrieres des Maréchaux," the sandstone quarries belonging to the Ville de Paris, and of which the Parisian houses are built.

The interesting collection of drawings and buildings executed by the Paris Municipality are given under the head of "Ville de Paris Pavilion Drawings," along with the other architectural drawings.

Near the "maison salubre," at the other end of the pavilion, is a Parisian lamp-post (why cannot we in England have artistic lamp-posts?—they are just as easy to cast as badly-designed ones) used as a "station manométrique" for measuring the compression of water in the supply pipes with which it is of course in communication.

The west pavilion contains students' works from the "Ecole Municipale Professionelle de Paris"; apparatus in connection with help to the drowning undertaken by the municipality; the exhibits of the Paris Fire Brigade, and also in connection with the teaching of drawing, &c., in the municipal schools.

WHITEFIELD TABERNACLE COMPETITION.

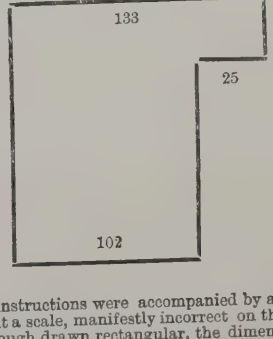
As Mr. Woodward could not bring the question of the award in this competition before the notice of the Institute on the 17th ult., he agreed with the assessor, Professor T. Roger Smith, that they should refer the matter to the decision of the President, if he were willing to undertake the service, and publish his decision. The President, having acceded to this proposal, arranged a meeting with the foregoing gentlemen, and the following is a copy of his decision:—

WHITEFIELD TABERNACLE COMPETITION.
20, New Cavendish-street, W.
9th Dec. 1890.

Gentlemen,—At our interview on the 28th ult., Mr. Woodward stated his objections, with a view to the interests of the profession, to Professor Smith's award, and the Professor offered his explanations in defence of his action in the matter. It now becomes my duty, in accordance with my promise, to express the opinion I have formed on the merits of the case.

I should premise that I have arrived at my decision on the questions at issue without seeing or considering the merits of the various designs.

It appears, in the first place, that the instructions to competing architects were not prepared by a professional adviser, and contained a clause limiting the cost to the sum of £15,000, which, as Professor Smith, the assessor appointed to report on the plans, rightly points out, appears inadequate for the purpose. That, in the second



place, the instructions were accompanied by a plan of the site without a scale, manifestly incorrect on the face of it, because though drawn rectangular, the dimensions of the sides running N. and S. do not agree. It further appears, from Mr. Woodward, that one, at any rate, of the competitors inquired at headquarters what he was to do under the circumstances, and was told by the representative of the secretary that he was "to stick to the dimensions figured on the plan"; while, on the other hand, the assessor was informed by the secretary that one or more other competitors who made similar inquiries were told that, as no further instructions could be given, they must act in the matter as they thought best. They, therefore, went to the site itself, and found that the frontage towards Tottenham Court-road actually measured 108ft., which exactly tallied with the difference between the two other dimensions at the back of the site. They accordingly made their designs fit the actual site. One of these designs was that selected by the assessor for the first place in the competition. Mr. Woodward's contention is that though the assessor had stated that the sum to which the competitors were limited, was not, in his opinion, adequate to carry out the work in a worthy manner, and though the plan was incorrect, it was nevertheless his duty to have rejected at once every design the cost of which did not conform to the instructions, and the outline of which was not kept within all the dimensions figured on the plan issued to the competitors.

Now, after a very attentive consideration of Mr. Woodward's arguments, I confess, though I am fully sensible of the difficulties peculiar to the case, which seem to me to preclude an entirely satisfactory course of action on the part of the assessor, I do not agree with him in his conclusions, as they would practically have rendered the competition abortive. As the assessor points out, it is impossible to pronounce authoritatively on the question of cost. All an assessor can do is to form his own opinion as to the probable cost of the respective designs, and to let that opinion have full weight in his decision. In this case he informed us that, though, according to his estimate, the design of his selection would probably exceed the limit by about 11 per cent. (a subject, however, on which he could not pronounce authoritatively), it was one of the least expensive of the series.

With regard to Mr. Woodward's second objection, I am of opinion that, had I been a competitor, given a manifestly faulty plan, I should probably have done what the successful competitor did—sought information on the subject; and that being refused, should have measured the site, and, finding that such measurements satisfactorily corrected the plan, I should have adhered to them. And had I been the assessor, I should probably have not rejected designs so prepared, especially if I had seen, as Professor Smith assures me he saw, designs on the restricted site which he preferred as designs, but which he was obliged to set aside on the score of cost.

I cannot withhold my opinion that the decision has an unsatisfactory aspect; but I entirely attribute this to the nature of the instructions issued before the assessor was appointed.

In coming, therefore, to the conclusion to uphold Professor Smith's award in a very perplexing case, I would put it most earnestly to future competitors to urge upon committees the absolute necessity of choosing their assessor at an early stage, so that the instructions, and the plan of site accompanying such instructions, may be sent out under his supervision, when probably awards would be arrived at which would not call forth the censorship of those who are anxious for the fair repute of competitions, to which we are in so many instances doomed at present.

I am,
Gentlemen,
Yours faithfully,
(Signed) Alfred Waterhouse.

Professor T. Roger Smith and W. Woodward, Esq.

SCHOOLS OF ART.

The Camden School of Art.—The annual distribution of prizes at this Government district school of art took place at the school premises, 4, St. Bartholomew-road, Camden-road, on Saturday night. Mr. Richard Chamberlain, M.P., who presided, congratulated the school on its success during the past year, remarking that whereas the number attending had been about the same as in the previous year, the number of prizes and certificates gained had increased from 140 to 168. The increase had been mainly in the higher branches of art. Sir Philip Cunliffe Owen, in addressing the students, said that this school had the highest reputation with the authorities at South Kensington, and he was glad to find that one of its chief points was the study of design. Some of the best designers of the day were now to be found in English schools of art, and we had not now to go to France for our designs. Students in these schools now had a very promising future before them as regarded remunerative work, not only in this country, but also in France.

The Royal Female School of Art.—The annual distribution of prizes to the students of this institution was made on Tuesday at Mercers' Hall, Cheapside. The 31st annual report stated that during the past year 172 students received instruction in art, and that on the 8th of April 517 works were forwarded to South Kensington for examination and competition for awards. The Duchess of Rutland distributed the prizes, the chief recipients of which were: Alice Mabel Hoke and Rosie Cordelia Whiteside (the National Gilchrist scholarships of £50); Hariot Dunnell (the Atkinson scholarship of £25); Alice Langford (the Clothworkers' scholarship of £50); Ida Marion Kirkpatrick (the Queen's scholarship of £60), and Helena Evans (the Queen's gold medal).

WAYSIDE NOTES.

IN the current number of the *Nineteenth Century* there is an appeal by Mr. Frederic Harrison for the return of the Elgin marbles to the Greek nation. This appeal having been seconded by an article in the *Standard* early in the month, the hopes of the Hellenes have been raised in anticipation of possible repossession of these really priceless sculptures. The *Standard* correspondent writes from Athens, on Tuesday night, to the effect that the appeal and the subsequent article have revived a grievance which has been practically dormant for over half a century. For the last fifty years the Greek nation has had all its spare energies fully occupied in endeavours to maintain its independence; but having lately settled down into a condition worthy of some respect, is prepared to look after matters of a more domestic character. Its condition with regard to the Elgin marbles question may have been comparable to that of a lighted match to a barrel of gunpowder. A writer in the *Nineteenth Century* holds the match and the gunpowder explodes.

The disappearance of the Elgin marbles from the galleries of the British Museum would be a national artistic calamity. This must be evident to all. It may require an accomplished sculptor to appreciate their full glories of line and form, of composition and workmanship; but the nobility of conception and the divine grace in the figures represented must be apparent to even a casual observer having either a modicum of good taste or a limited measure of cultivation. What the young artistic world would do without the marbles it would be difficult to say. The loss would be irreparable. It is certain that the claims of the Greek nation on the sense of morality of the English people rest upon some foundation. Lord Elgin, the Greeks would argue, purchased the marbles of an invader of Greek territory, and thus, though bought for a price, the payment was not made to the rightful owners. Contemporary opinion at the time when the fragments were removed to this country was often adverse to the removal, even passing over Lord Byron's denunciation. It has been said that the sculptures are better preserved at the British Museum than in Athens; to which the Greeks reply, that though in the days when the country was overrun with Turkish troops this might have been a forcible plea enough, it does not hold good now that the nation is independent and consolidated.

Anyhow, it would seem that the Greek nation is prepared to make the most of a prospect of a revived controversy on this subject, and to avail itself to the full of the appeal to the British conscience. The keenest interest is aroused, and the question, says the *Standard* correspondent, has now gone beyond the stage of discussion, and entered that of action. The Municipal Council of Athens has decided to make a formal appeal to the British Government and Parliament for the return of the marbles. The Greeks already look forward to the result of the petition with some degree of hope. They have confidence in the sense of justice of the English people, and, says the correspondent, if they are not disappointed, there will be a strong revival of their former enthusiasm for England.

We shall like the enthusiasm of the Greeks; but we also are strongly attached to the fascinating beauty of the Elgin marbles. The matter will now probably come before Parliament. There will be discussion on the subject: some will hold that "possession is nine points of the law"; others will say that we are under a moral obligation to Greece to return the sculptures. Let the matter be judged impartially. If it be shown that the Greek nation cannot fairly expect us to make the sacrifice, and that the marbles are of more true service to humanity in their present position, let them remain: but if it can be clearly demonstrated that the English people are morally bound to return them forthwith, in order that the public conscience may be clear and serene, then whatsoever pangs and regrets it may cost the artistic world, let us cheerfully give to their rightful owners these gems of the old Parthenon.

All will be glad to hear that Dr. Schliemann, who lately underwent an operation on the eye at Halle, is now quite recovered, and is returning by way of Berlin and Paris, to the scene of his excavations in Greece.

The Commission appointed to inquire into the condition of Westminster Abbey, although no report has yet been published, have issued a blue-book wherein will be found much matter of interest to archæologists, and, indeed to many others. Accounts of the witnesses examined will be found therein, and the statements of the clerk of works to the Abbey, and of Mr. Pearson, the architect to Mr. Shaw-Lefevre's Campo Santo scheme, will prove of interest. Mr. Pearson seems to have two plans for affording further accommodation for the monuments—the great question at issue. One would be the erection of a new north aisle connected with the west end of the church and with the north transept, and would include side chapels for the display of monuments. The other scheme would provide the desired accommodation on the other side of the Abbey, necessitating the pulling down of old buildings in Palace-square, and were this plan carried into effect, views of the Chapter House would be opened. It not being good form to comment on matters under the consideration of Royal Commissions, I say nothing as to these schemes further than that I feel convinced, should either the one or the other be carried out, the architectural profession would be of one voice in the matter.

The special A. A. business meeting held on Friday last for the alteration of the rules is adjourned—says the card I have received from the hon. secs. of the Association—till Friday next (to-day), the 19th inst., at 7 p.m., when the consideration of the new rules will be continued. I hear from my friend, whose perseverance bespeaks the honesty and earnestness of his intentions, that last Friday's meeting decided on ballot papers, and that Mr. Cole A. Adams has raised a question of a two-thirds majority, which will be contended for. The rule as to the continuance of the half-guinea subscription for old members is not yet decided, but will be considered to-night. There was some difference in opinion as to whether this should come under the heading "Constitution" or "By-laws." The former, I should say, certainly. "Who wants it altered when it is settled?" asks my correspondent, referring to the argument that if under "Constitution" it would be difficult to alter.

I am always ready to give our dear friend, Mr. Buggins, a tip—a "cert," or "sure thing"—because he so frequently affords me a serviceable illustration wherewith to point a moral. Here is a really good thing:—Owing to the erection of the L. and S.W.R. Company's new works at Eastleigh Junction, Hants, building operations have been proceeding on an extensive scale, and it is believed that two years hence the population will number at least 10,000.

Frost and snow has kept the bricklayer idle for weeks, and with the bricklayer in enforced idleness, other trades get slack in sympathy. Yet, it is pleasant to learn from a memorandum prepared, officially, for the *Board of Trade Journal*, that the number of unemployed has increased but slightly with the past month or so. "The demand for skilled labour remains remarkably good, even in those trades most affected by weather influences. The building trades are perhaps most susceptible to these causes of depression; but during the month the proportion of unemployed has only increased from 1·4 to 1·8, which is very low indeed." This is reassuring; yet I venture to think that even the difference between ·4 and ·8, insignificant as it appears to the mathematical eye, represents a considerable amount of shivering and starvation and general human misery.

A venerable F.R.I.B.A. in a generous after-dinner mood, has bet me half-a-crown to sixpence that I cannot drive a nail into the mortar of some brickwork in a building he erected during frost some 25 years back. Unfortunately, for several reasons, I cannot respond to this, but perhaps someone would like to take it on in my stead?

I hardly know what your correspondent who slates by the acre wishes to impress upon me or your readers by his letter in your last issue. I thought at first that "A. H." desired to demonstrate that I was ignorant of the fact that the slater graduates the slating of a roof; but as every intelligent architect's office-boy knows that neither the quarry owners nor their agents send out slates in assorted sizes like a conjuror's nest of boxes, I conclude he will admit the possibility of my also knowing the fact, or, at least, of having a suspicion of the truth! So I take the letter in good part, and if there is really any discrepancy in my "Notes" of a fortnight ago, and anything displaying knowledge of slates and slating inferior to that possessed by your correspondent, I crave lenient treatment from all, because I have never had in my bills of quantities:—"7 acres 0 roods 23 perches super. blue Bangor slating," &c., &c. My own modest slating with Welsh slates has ever had, perforce, that sleek appearance of which I complained. Were I to slate in acres, I would endeavour, as your correspondent has done, to improve the quarrymen's ideas, though I doubt not but that I should be, if anything, less successful than he.

A Merry Christmas to all! I had some thoughts of launching into poetry on the subject; but my poetic researches have utterly failed to produce anything in verse equal to the magnificent effusion of last year, which led to such an unprecedented run on the "B. N." that the Strand was blocked for hours, and, consequently, the whole business of the City thrown out of gear. I have essayed several couplets on the festive season, but I find no afflatus works within me. So, notwithstanding the loss that will ensue to the proprietor of this journal, I am reluctantly compelled to forego poetry and return to prose. A Merry Christmas—a Merry Christmas!

GOTH.

CHIPS.

The work of widening Bridge-street, Warrington, has been completed by the opening this week of provision shops at the Friars'-gate end. The last two shops have been built by Messrs. Gibson and Son, from designs by Alderman Wright, Sankey-street, Warrington, who has acted as architect for the whole block of buildings from Friars'-gate to the Roebuck Inn.

The late Mr. R. D. Catchpool has left to the Corporation of Colchester the sums of £3,000 for the purchase of a public park, and £1,000 towards the formation of a free library in that town.

The Aberdeen granite business of Messrs. James Wright and Sons was exposed for sale on Friday at the upset price of £8,000, and purchased by one of the partners for £14,450.

At the York Consistory Court on Friday a faculty was decreed to the incumbent and churchwardens of St. Paul's, York, to enlarge the chancel, fix new choir seats, build a new choir vestry, take down the organ in the gallery, and refix it at the north-east corner, remove and refix the pulpit, and make other alterations. Messrs. Demaine and Brierley, of York, are the architects.

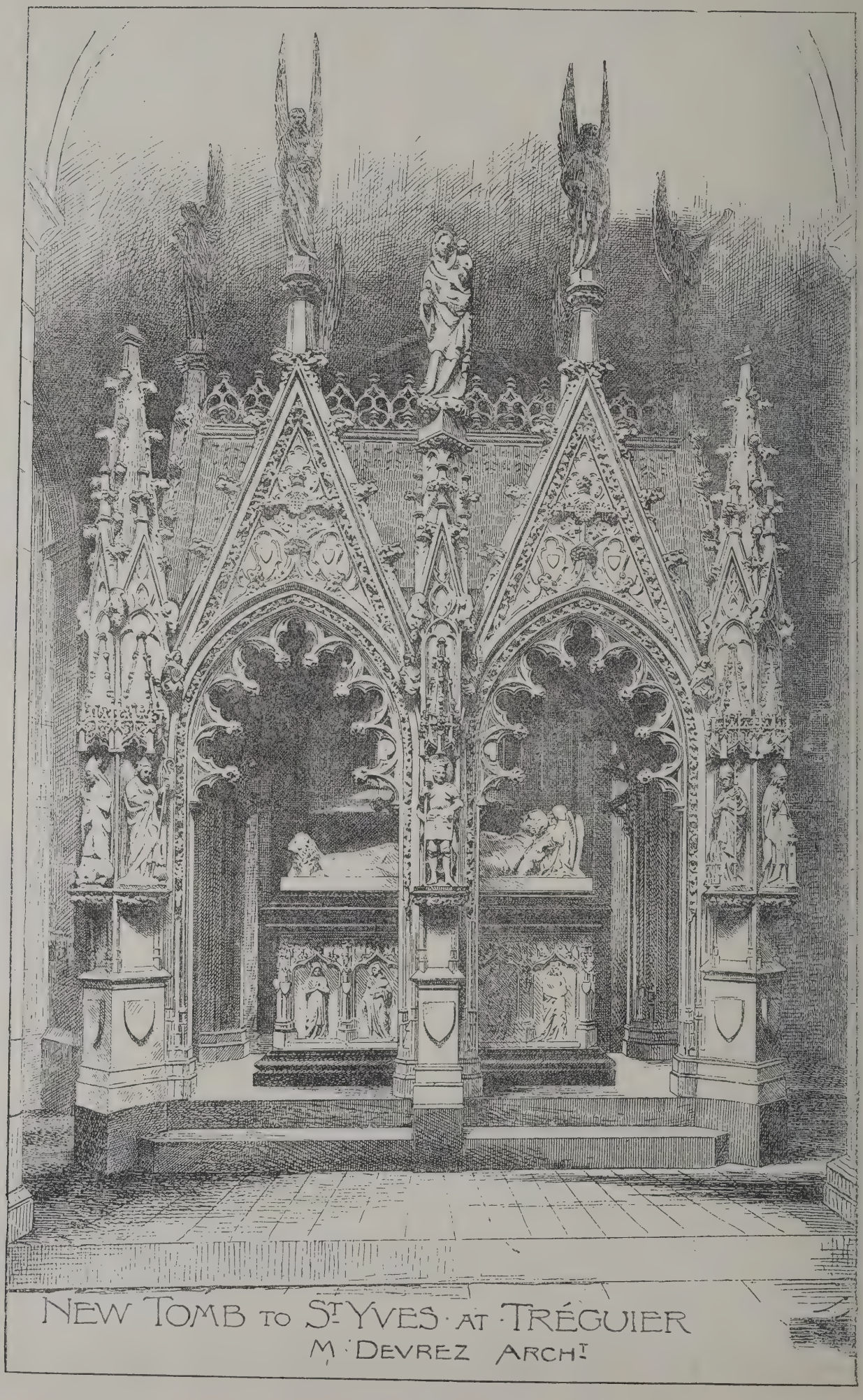
The town council of Tewkesbury have adopted plans by Mr. Medland for the enlargement and improvement of the town hall.

The Basford Union Hospitals, Nottingham, are warmed and ventilated throughout by means of Shorland's patent Manchester grates, supplied by Mr. E. H. Shorland, of Manchester.

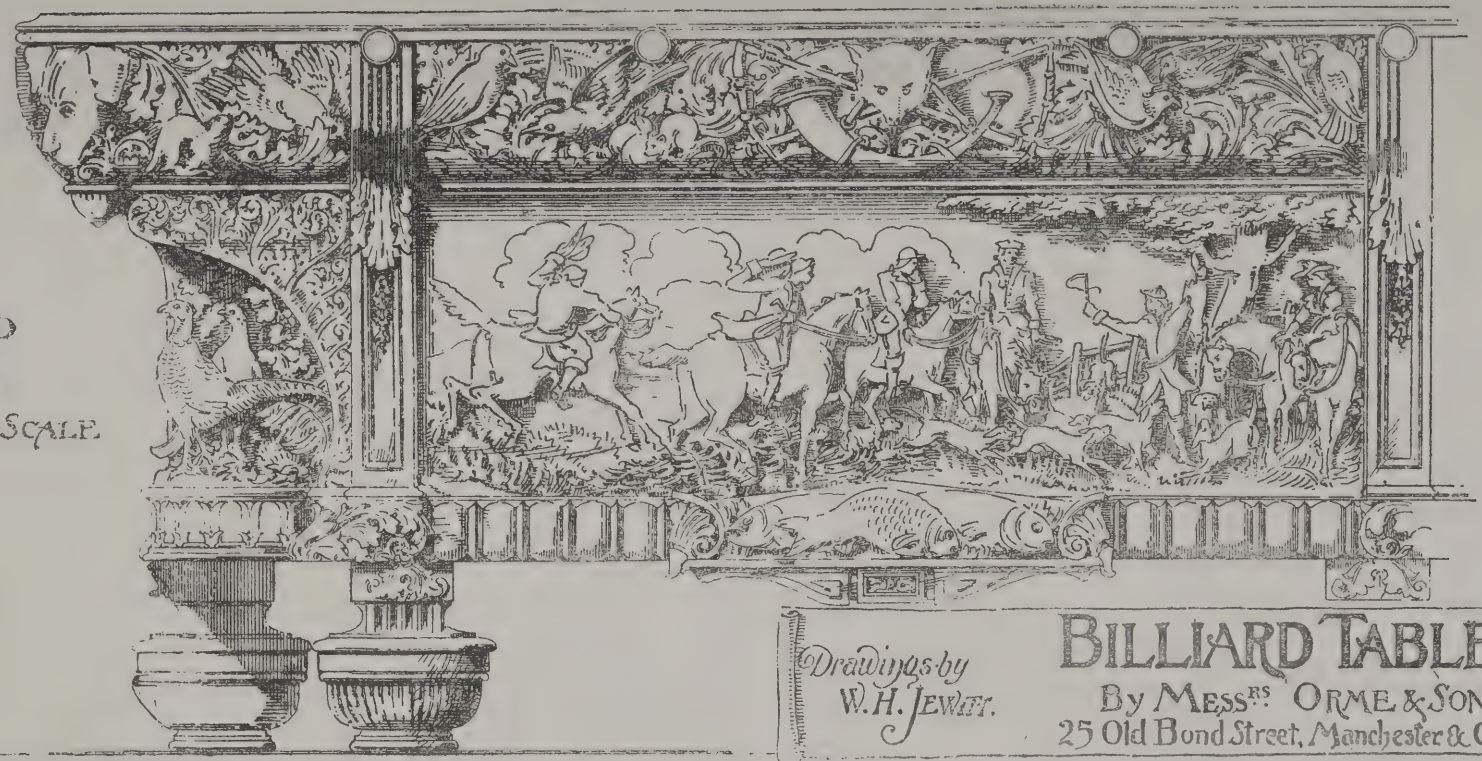
A new workmen's institute is about to be built at Moreton-in-Marsh, at a cost of about £1,600. Mr. J. F. Curwen, Kendal, is the architect, and the work has been intrusted to Mr. Alfred Groves, builder, Milton-under-Wychwood, Oxon.

There has recently been unveiled in Fairmount Park, Philadelphia, U.S., an equestrian statue of Joan of Arc, by M. Frémiet. It is a repetition, with some variations, of that bronze statue of the heroine which has long adorned the Place des Pyramides in Paris.

An inquest was held at Northallerton on two days of last week on John Mattison, 44, mason, of Richmond, who died from injuries sustained by the collapse of scaffolding. The contractor for masonry, Matthew Metcalfe, deposed that, assisted by deceased and another man, he erected the scaffolding, and thought it was perfectly safe. James Willoughby, builder and contractor, of Northallerton, said he had examined the scaffolding and building and he found it a very unworkmanlike piece of business. The footlogs were pieces of old timber, the majority of the poles were completely rotten through. It was totally unfit to occupy the position it had been placed in. He considered that the present scaffolding was not safe. The jury returned a verdict of "Accidental death," but added that there had been "great negligence on the part of the contractor (Metcalfe), but that the negligence was more of an error of judgment than anything that would have incriminated him."



NEW TOMB TO St YVES AT TRÉGUIER
M. DEVREZ ARCHt

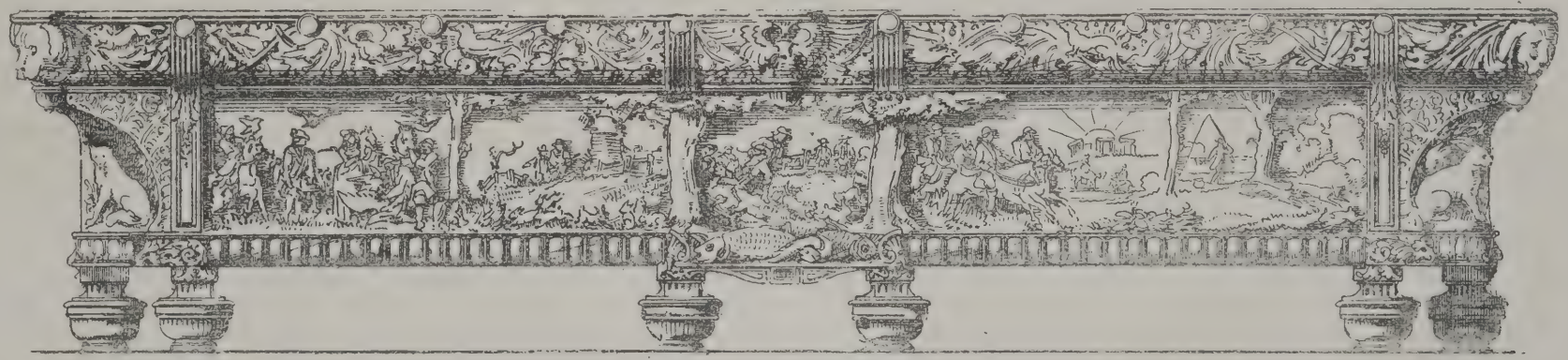


PORTION OF END
ENLARGED
DOUBLE-SCALE

Drawings by
W. H. JEWETT.

BILLIARD TABLE.

By MESSRS ORME & SONS
25 Old Bond Street, Manchester & Glasgow



SIDE ELEVATION.

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OF THE
UNIVERSITY OF ILLINOIS

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ILLUSTRATIONS.

GARDEN HOUSE, THROGMORTON AVENUE. — CINCINNATI ARCHITECTURAL CLUB DRAWINGS AND SKETCHES.—NEW TOWN HALL, SUNDERLAND.—PROPOSED MEMORIAL CHURCH AT COLSTON BASSETT.—SOUTH DOOR, ST. HELEN'S CHURCH, BISHOPSGATE.—DETAILS OF DOORWAY AT THE AMBER PALACE, LAHORE.—A BILLIARD-TABLE.—NEW TOMB TO ST. YVES AT TREGUIER.

Our Illustrations.

GARDEN HOUSE, THROGMORTON-AVENUE.

We give an illustration this week of a large block of offices just completed in Throgmorton-avenue. This building occupies a frontage of 142ft. next Throgmorton-avenue, and a short return frontage of 30ft. next Austin Friars. The site on which the building is erected belongs partly to the Carpenters' and partly to the Drapers' Companies, and is the last portion of land hitherto unbuilt on in Throgmorton-avenue, and which formerly formed a part of the gardens attached to the halls of the Carpenters' and Drapers' Companies. The entire fronts are faced with Portland stone. The first and all upper floors are planned for the occupation of the eminent firm of solicitors, Messrs. Ashurst, Morris, Crisp, and Co., and their strong-rooms are in the sub-basement. Portions of the ground floor and basement have been let to the International Financial Society, and have been suitably fitted for their occupation by their architect, Mr. E. A. Grüning. The remaining portions of ground floor and basement are not yet occupied. The sub-basement will be used for strong-room purposes only. A passenger lift traverses the entire building. The floors generally are fireproof, and the fittings of the best class. The architects are Messrs. Davis and Emanuel, and the builders Messrs. Colls and Sons. The work throughout is a successful example of the best class of City work. The passenger lift has been executed by Messrs. Archibald Smith and Stevens. The artistic wrought-iron inclosure to this lift, which passes up the well-hole of the staircase, has been executed by Mr. J. Caslake, and we illustrate a portion of this work, which is of a very successful character. The tiling to the staircases also deserves mention as being a successful combination of colour, and was executed by Messrs. Doulton and Co. The building throughout has been piped for gas and wired for electric lighting by Messrs. Strode and Co., and the fittings supplied by them are of satisfactory design. The principal staircase was executed in concrete. Mr. Gearing, the general foreman of Messrs. Colls and Sons, has superintended the work throughout, and credit is due to him for the way in which he has successfully carried out many troublesome matters of detail.

SELECTIONS FROM THE CINCINNATI ARCHITECTURAL CLUB EXHIBITION.

This sheet of reproductions which we give to-day from the exhibits at this collection of architects' drawings and sketches is exceedingly interesting, showing as it undoubtedly does the typical methods so characteristic of American draughtsmanship, of which we have a few successful imitators here. We have to thank the hon. sec. of the exhibition committee, Mr. A. O. Elzner, architect, Cincinnati, for the facilities afforded us by which we are enabled to bring our selection of reproductions before the readers of the Building News. The catalogue of the exhibition is quite a work of art, and got up in a style and with a finish quite unknown in this country. The cover, a rich, warm-red terracotta vellum paper lettered in gold, is not disfigured with imprints and advertisements. The ample use of margins and capital paper shows off the subjects illustrated to great advantage. We can only speak of the production in these general terms; want of space prevents our enumerating the illustrations in detail. Turning briefly to those herewith arranged on our plate, we have first a very American-looking chapel for the First Congregational Society, by Mr. Wm. Martin Aiken, architect, Cincinnati, with round towers, and a portal arcade of semicircular arches under a rose window of the main gable. Of a later type of work is Mr. G. W. E. Field's City Front, Cincinnati, next to the last. The Old Gateway, sketched by Mr. Claude Bragdon, Rochester, is boldly treated, bright, and telling; and Mr. F. H. Bacon has shown what a few masterly lines will do in his study of the Greek Exedra, situated near the Temple of Apollo, in the island of Delos. These seats, which formed part of the ancient baths and other buildings, were used for conversation by the visitors. The washed drawing of a small Altar under a Baldachin from St. Mark's, is by Mr. J. A. Schweinfurth, of Boston. Mr. J. Wilson Eyre, jun., is the author of a "Fountain in a Blank Wall," with the pent-roof over, and another clever sketch by Mr. Claude Bragdon, from Hildesheim, concludes the subjects on our plate. Will such an architectural exhibition and such an illustrated catalogue ever be possible among our English architects in London?

SUNDERLAND TOWN HALL.

The architect of this building is Mr. Brightwen Binyon, A.R.I.B.A., of Ipswich, whose design, submitted under the motto "Stabilitas," was awarded the first prize of £100 in competition, on the recommendation of Mr. Alfred Waterhouse, R.A. The builders are Messrs. E. H. and G. Allison. The foundation stone was laid Sept. 29th, 1887. The buildings are in the Italian Renaissance style, and are 150ft. long by 90ft. broad, with an average height of 46ft., and a height to the top of the tower of 140ft. Stone and brick are the materials used in construction. The plan is a simple rectangle, as will be seen from the figures just given, about twice the length of its breadth. On three sides a good light is obtained, but on the fourth, or north side, there is a blank wall where some day other buildings, it may be expected, suitable to the surroundings will abut. The offices are ranged round these three sides with a corridor, and inside that again are two spacious well-ways for light, with a grand central staircase between them. The result of an arrangement as simple as it is effective is that the corridor is beautifully light, and ready access is obtainable from one part of the building to another. In the centre of the Fawcett-street façade the tower is placed, 140ft. high and 20ft. square, finished at the top with a cupola dome and lantern. In the middle of the tower is a clock. The centre of the dial is 85ft. from the ground. The clock has four illuminated dials of skeleton cast-iron frames to form the circles, figures, and minutes. These dials are 8ft. 6in. each in diameter, filled in with white opal glass. The large going wheel is 16in. in diameter, and has Lord Grimthorpe's maintaining power to keep the clock going during the time of winding up. It has also his double three-legged gravity escapement, with a 1½ sec. pendulum, compensating for variations of temperature, with zinc and iron tubes, and steel rod through the centre. All the barrels are of iron, with patent steel cords. The main wheel for striking the hour is 21in. in diameter, with cams attached or fixed on it faced with steel, to raise a hammer of the proper size for striking the hours on the large or tenor bell, which weighs nearly 4 tons. The hammer weighs about 2cwt., and is fixed in an iron frame and pivoted in, with wrought-iron shaft and hardened and tempered check-spring. The main wheel of the Cambridge or Westminster quarters is about 22in. in diameter, with cams attached for lifting the hammers for chiming on the four quarter bells. The first blow of the quarters is struck exactly at 15, 30, and 45 minutes past the hour by special mechanism, first introduced by the makers, Messrs. Wm. Potts and Sons, at the Cathedral, Lincoln, and since then at Rochdale, Dewsbury, Burnley, and Bolton Town Halls, the clocks for the South Shields Corporation, and Hexham Abbey clock, and the church clocks of Ryton and Wylam-on-Tyne. The hours are let off independently of the quarters, and at the hours the first blow of the hour-hammer denotes the correct Greenwich time. There are also two index dials inside the clock chamber, one showing the seconds and the other the minutes, for the purpose of setting and adjusting the outside hands, weights cast in slips, and everything requisite and necessary in a first-class clock. The whole reflects great credit on the makers, Messrs. Potts and Sons, of Guildford-street, Leeds, who are also the makers of the Central Station clock. The tower affords a good opportunity for ornamentation, of which the architect has fully availed himself. As probably the tallest object in Sunderland, it affords a splendid view of the coast and inland for many a mile. The entrance to the building is approached by steps to the ground floor. The doorway is arched. On either side dwarf pilasters and massive twin trusses support an overhanging balcony with a beautiful central window, the whole being surmounted by a noble entablature and pediment enriched with cantilevers. The front is well balanced at either end by an elegant arrangement of columns inclosing three arched windows, and having a cornice and parapet finished with dormer windows and pavilion roofs. The same feature is repeated at the corners next Athenæum-street, contracted in width by the omission of one bay. The whole of the ground floor is of polished ashlar, with rustic joints, the 4ft. base being finished with rock-faced panels. The street fronts are enriched by pediment and medallion sculptures, carved panels, and floriated capitals to columns. The internal arrangement of the building has been carefully planned to meet the requirements of the different departments. Three of these are on the ground floor, namely, that of the borough accountant, to which is united the rate-collecting department, the borough engineer's department, and on the west, or railway-station side of the building, the health department. The first floor is occupied by the offices of the Town Clerk, two committee rooms, the Mayor's Parlour, and two council chambers, the larger one of which is also suited for an assembly and general meeting room. There are two main entrances. The Fawcett-street entrance passes under the tower, and the Athenæum-street entrance is near the railway-station. A back entrance is also provided, with access from an arched passage entering the building behind the public health office. It is connected with a staircase from the basement to all the floors, and is so planned that the public attending council meetings or going to schools of art, on the second floor, can be shut off from the rest of the building — a device which we believe, strongly recommended Mr. Binyon's plans to the favourable consideration of the corporation. From the main entrance we pass into a vestibule, the size of the tower, 20ft. square, and thence to a spacious hall and staircase, which, with its central flight rising straight in front of the visitor as he enters, produces a very pleasing effect. The balustrades of the staircase are modelled in faïence ware, and together with the tile dado, give a warm and rich effect of colour, which is further enhanced by contrast with the colour tints of the stonework. Stained-glass windows and a carved ceiling with decorated panels of enamelled iron, add to the richness of effect. On the left side of the entrance are the borough accountant's offices, and on the right the borough engineer's office. Immediately adjoining is the general office, 33ft. 6in. by 22ft. 6in., all facing Fawcett-street. In the rear of the latter is the engineer's department, the spaces being divided by wood and glass screens, and partitions arranged for the several officials, and adjoining the back street are the cloak-room and the sanitary arrangements. Immediately at the back of the grand hall and staircase is a private office for the medical officer. On his right is the laboratory, and on his left the inspector's office, the back staircase and entrance dividing the public office for the scavengers' superintendent, &c., from the above. Returning to the entrance-hall, we have the accountant's

department—first the private office on the left hand, then the clerks' office filling up the space to Athenæum-street. The large room between these and the entrance is 31ft. by 29ft., and is for the rate office, which is entirely lighted from Athenæum-street. On the first floor we are landed from flights of stairs on either side on to a spacious corridor, which is lighted from the open areas, and in the centre, under the towers, we find the deputy town clerk's office, on the left the town clerk's office, then a waiting-room and cloak-room. In the south-east angle is placed the mayor's chamber, 22ft. 6in. by 21ft., with two fronts, which is thus well lighted; then the ante-room, 19ft. by 21ft., and the council-chamber, 44ft. by 31ft., all lighted from Athenæum-street. Returning to the centre, we have, on the right, the town clerk's general office, 30ft. by 22ft. 6in., and at the end from back to front is the art gallery or reception-room, 77ft. by 33ft., having an area of 2,541sq.ft., and lighted by ceiling lights. Between it and the staircase in the rear are three committee-rooms, approached from a corridor round by the art gallery, in which also are placed the sanitary arrangements. On the second floor are the school of art premises, approached from the back staircase only. This department is at the end facing Athenæum-street, and the sanitary exhibition rooms embrace the tower and Fawcett-street front as far as the art-gallery roof. The back or private staircase also gives access to the caretaker's rooms, which are over the committee-room. In the rear of the main staircase, at the end of the art gallery, is a kitchen, with lift, &c., for public entertainments and banquets when held in the reception-room. The basement floor has a variety of spaces and rooms, which seem well lighted from the open areas, the main apartment, marked Ballot-room, being under the rate offices, and the large store-room required for the voting-by-ballot fixtures and boxes is under the engineer's offices. The workmen's pay-offices, coal-chamber, sample-room, store-room, and heating-chamber, &c., are well arranged at the rear, gaining light from the areas placed in the back street. The sculpture and stone carvings have been executed by Messrs. Sidney W. Elmes and Son.

COLSTON BASSETT, NOTTS.—PROPOSED MEMORIAL CHURCH.

Our illustration shows one of the designs sent in (in a limited competition) for the erection of the new Memorial Church, which is proposed to be erected at Colston Bassett, Notts. This was the accepted design, conditionally upon the work being carried out for the sum named in the competition. It is proposed to erect the church with rock-faced Coxbench stone on outside, with fine Hollington stone for all external dressings; the inside to have hammer-dressed Coxbench ashlar, with Ancaster or Bath dressings; the columns carrying nave arches to be in white Mansfield stone; and for all steps, paving, &c., blue Yorkshire to be used. The roof will be covered with best pressed Staffordshire tiles, and oak-block flooring to floors of nave and transepts. Mr. Arthur W. Brewill, of Nottingham, is the architect.

SOUTH DOORWAY, ST. HELEN'S CHURCH, BISHOPSGATE.

This sheet, drawn by Mr. F. Kingsley Oliphant, of Dover, represents a well-known doorway in the City of London, near to Crosby-place, which is reached under a low timber-corbelled gateway out of Bishopsgate-street. The Church of St. Helen has been described as a kind of Westminster Abbey for the City on account of the vast number of tombs and monuments located within its walls. The building consists of two aisles separated by Perpendicular arches, with chapels attached at the south-east. Only a very small part of the church is used for Divine service. An inscription over the west door states that "This is none other than the House of God;" but the usual entrance is by the Jacobean doorway which we illustrate to-day. The tombs of the interior are of the greatest interest, including several removed from the church of St. Martin Outwich, which was pulled down in 1874.

DETAILS OF DOORWAY AT AMBER PALACE, LAHORE.

(For description, see p. 875.)

BILLIARD-TABLE.

This, entitled the "Sportsman's Table," was concepted by Messrs. Orme, of Old Bond-street, and is now in course of construction at their works in Manchester, from drawings prepared for them by Mr. W. H. Jewitt. The sides bear sporting scenes as shown, the opposite end to the one given being a stag-hunt. The corners contain different objects of field sports—fox, hare, pheasant, black-cock, bittern, and wild duck. The cushion frieze or cornice is a foliated ornament, enriched with birds and vermin, magpie, rook, hedgehog, polecat, badger, &c., the centre of each side having a trophy of whips, brush, antlers, &c.

NEW TOMB OF ST. YVES AT TREGUIER.

This monument to St. Yves, a popular Breton saint, has been erected in what once was the Cathedral in the small seaside town of Tréguier, which, by the way, is the native place of M. Renan. It stands on the site of an older one, erected by John V. of Bretagne, in the 15th century, and which was totally destroyed in the days of the Revolution. The recumbent statue of the saint is in white marble. The whole of the other work, with the exception of the base and cornice of the tomb (which are granite) is of white stone. The figures carved on the tomb represent the parents, friends, and followers of the saint. In the niches of the piers stand the first nine Breton bishops and other local personages; while the pinnacles are crowned with figures of the Virgin, St. Michael, and angels with spread wings. Sculpture, representing animal life on land and in the sea, is also worked in, suggested by the maritime position of Tréguier. M. Devrez is the architect of this really fine monument.

COMPETITIONS.

Ceylon Planters' Association Tea Kiosk.—Government have granted the Planters' Association a splendid site for the Tea Kiosk, which is to be erected before long in the vacant space near the passenger jetty at Colombo. Designs were invited in limited competition, and the plan which has been chosen is by Messrs. Karslake and Mortimer, the senior partner of which firm is a close relative of a leading member of the planting community. The Kiosk is 60ft. long by 40ft. broad, which gives ample space for a wide verandah, a bar and counter with servants' room, pantry, and store room behind. There are also two ladies' rooms, and altogether the plan promises a building eminently suited for the purpose to which it is to be put.

Middlesbrough School Board.—At the last meeting of this board a communication was received from the Educational Department formally approving of the plans of a block of schools to be erected in Victoria-road. The plan and design of these was accorded the first place in a limited competition, Mr. E R. Robson, the architect to the Educational Department, acting as assessor. Nine architects in practice in Middlesbrough, Darlington, Hull, Leeds, York, Bradford, and Newcastle were invited to compete, and eight sets of plans were received by the Board. The design placed distinctly first by Mr. Robson bore the motto "Vi et Armis," and was found to be the work of Mr. J. Mitchell Bottomley, of Middlesbrough. The site at the Victoria-road schools is an elongated parallelogram, and the plan adopted for the buildings is somewhat unique, consisting of two separate school blocks, connected in the centre by the entrances, lavatories, and teachers' rooms.

Swansea.—The School Board for Swansea, after a long discussion on the desirability of instituting a fresh competition for plans for the Higher Grade School, have instructed their clerk to inform the following architects—Mr. T. Townend, jun., Rochdale; Mr. Locke Worthington, 23, Queen Anne's-gate, Westminster; Mr. Henry Sully, Nottingham; Mr. J. Buckley Wilson and Mr. Glendenning Moxham, Swansea; Messrs. Mercer, Allender, and Chidson, Liverpool; Mr. T. P. Martin, Swansea; Mr. Richard Watson, Kingsbridge—that the Board is disposed to offer a premium of 15 guineas for the best and 10 guineas for the second best set of plans and designs for the proposed Higher Grade Schools, confining it to the seven architects whose design most nearly met the requirements and approval of the Board on a former occasion, but upon the details enumerated in certain conditions, and to inquire whether, under the circumstances, they would be disposed to send in new designs.

MANCHESTER ARCHITECTURAL ASSOCIATION.

On Tuesday evening last, at the ordinary meeting of the association, Mr. T. Chadwick, A.R.I.B.A., President, in the chair, a lecture was given by Mr. Edward Hewitt, A.R.I.B.A., Vice-President, and member of the firm of Messrs. E. and F. Hewitt, architects, Manchester, in the lecture-hall, Athenæum, the subject being "A Tour in Normandy and Brittany, from an Architectural Point of View," illustrated by an oxyhydrogen lantern with 60 original views from drawings and photographs. After explaining the route taken—and which the lecturer strongly recommended to anyone contemplating a holiday, and being easily extended with but little additional cost—Mr. Hewitt went on to describe the various buildings of interest in the different towns and villages visited. After landing at Boulogne, where there was so little of interest architecturally, the next town taken was *Abbeville*, with its grand church of St. Wolfram. The façade is a rich example of the Flamboyant style, with its three portals surmounted by pediments and flanked by two massive towers. The front is covered with flowing tracery and panelling, and the niches are filled with statues, the central doorway being most elaborately carved. Only five bays of the nave are built in this grand style, and it is a most unusual thing for the west end of the church to be built first, leaving the choir to be erected afterwards. There are many other points of deep interest that may be found in the back streets. For instance, some old Spanish houses, and quaint overhanging dormer windows, and half-timber houses in the fish market. The next move was to *Amiens*. Conspicuous above all buildings is, of course, the cathedral, with its carved wood flèche towering above the roof at the intersection of the nave and transept. The west front is the richest portion of the exterior, with its deeply-recessed portals; the arches are apparently supported by a series of statues with canopies; the arches themselves, and the tympanum of the arches are completely covered with figures and statuettes. Above the arch heads is ranged a beautifully-proportioned arcading, and over this is a line of colossal statues in niches; over the central portion is a grand wheel window, and the whole is flanked by two towers of unequal heights. The whole elevation is, indeed, a masterpiece of beauty. *Rouen*, the next town visited, has still much left of antiquity; the "so-called" modern improvements are fast destroying the venerable character of the place, with its narrow winding streets and picturesque overhanging gables which throw their deep shadows in all sorts of shapes. Their strange histories will, it is feared, soon be forgotten by all but a few cranky antiquarians; for as there is a law in Rouen, as also in Manchester, that no timber shall be allowed to project above a few inches, we should feel thankful that law works but slowly and leaves us something to satiate our ardent appetites for the things of by-gone days. The church of St. Ouen has much that is extremely beautiful, though it has not by any means the same charms as the cathedral. The church of the deepest interest is St. Maclou, even supposing the author of the "Seven Lamps" had not dwelt on the merits of the sculpture contained in its magnificent gates. *Lisieux*.—Here I found a charming little market town, from the centre of which arises the great towers of its venerable church of Pierre, and under its shadow clustered together a number of wonderful timber houses, black and weather-stained with age. The interior is a beautiful composition in the most refined period of Early French, with a circular end to the choir and the aisle continuing round. Beyond the choir is a charming 14th century Lady-chapel. Perhaps the strongest point of interest in Lisieux is its ancient domestic architecture, which may be found in every street, more especially in the Grande Rue and Rue aux Favres. *Caen* is a place where, from an ecclesiastical point of view, one would like to stop long, as there is so much of interest to an Englishman as being connected so much with the life of the great Conqueror, and in the period of his greatest achievements. The Abbaye-aux-Dames was founded by Matilda, wife of William, shortly before he set out for England. The Abbaye-aux-Hommes is indeed worthy of its founder, bold in design, as William the Conqueror was in his life. Then, again, there is the church of St. Pierre, with its won-

derfully graceful flèche. *Bayeux.*—The cathedral being the chief point of beauty; and there is also the Bayeux tapestry. *Sainte Lo*, the next halting place, and although picturesque, has not the amount of interest displayed in it that you see in many of the Normandy towns. The Abbey Church is situated in a grand position on the brow of a hill. *Coutances.*—Here we find another magnificent cathedral. In the western steeples there is absolutely nothing wanting, the massiveness of the base and the long elegant shafts, crockets, and pinnacles are carried out in all their perfection. The strange effect in the interior is in the nave triforium, which is not open, but richly panelled. *Mont St. Michel, Brittany.*—This is, in point of fact, a rock standing out of the sea about three miles from the main land. On near approach we see it rising sheer out of the sand. Coming closer we see picturesque houses surrounded by a high fortification and circular towers at intervals, and surmounted by the ancient monastery with its numerous turrets and pinnacles, and above all this rises the Gothic church, 400ft. above sea-level. Special attention should be given to the richness of the carved spandrels and the variety of design in the cloisters. *Dinan.*—Here the streets are found full of interest with the grey old houses constructed in wood in many places, covering the footpath, as in the "Rows" at Chester. There are several hundred English residents in Dinan, and the voices in the streets have a familiar sound, neither Breton nor French. Especial interest is attached to the steep and dirty street leading to the quay, Rue le Jersuale; it is indeed a ladder of slippery cobble-stones and pebbles. *Dol and St. Malo.*—At the former we find more picturesque houses and pretty streets, and a fine cathedral, the choir being more like an English church, with its square east end, than any I have seen in France. A delightful day may be spent along the ancient ramparts and narrow streets of St. Malo; the sea around dotted here and there with islands covered with grass, and on the brows of others are ruins of picturesque fortifications. *Vitre* and *Leval.*—Vitre, the next place I went to, is notorious for its old castle and picturesque group of buildings. Notice also should be taken of the 15th-century outside pulpit and overhanging canopy. The Flamboyant Gothic cathedral at Leval is well worthy of study; also the castle, with its entrance flanked by the round towers. *Le Mans* and *Chartres.*—At the former place we find a grand cathedral, 390ft. long, surrounded by a double aisle and twelve chapels, and the windows are filled with lovely painted glass. All the world knows of the beauties of Chartres Cathedral, my next stopping place, with its rude hewn piers, as though built for eternity, with its grand south-west spire and its triple portals, flanked on either side of piers by statues of royal saints. *Paris* and *Havre.*—With these two places my holiday drew to a close. It would be useless to attempt to describe the cathedral of Notre Dame, or the Abbey Church of St. Dénis, or the great interest attached to the Sainté Chapelle, and the many other churches I saw.—At the conclusion of the lecture, the President proposed a vote of thanks to Mr. Hewitt, which was seconded by Mr. Hill and supported by Messrs. Stelfox, Barker, Mold, and others.

JEYPORE PORTFOLIOS OF ARCHITECTURAL DETAILS.*

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

SCHOOLS of art and students of applied ornament will do well to acquire access to these portfolios of Indian ornament, for the simple reason that they present an almost endless variety of suggestive detail adaptable for modern uses, particularly where strictly conventional forms are desired. Few of the specimens represented, probably, may be found suitable for those who are on the look out for a direct crib; indeed, the highly elaborate style of the ornamentation, so characteristic of Indian work, necessarily often precludes the use of such examples for direct copying, at least for articles of ordinary use, while, of course, the style unaltered is not the most suitable for everyday purposes in Europe. There is, however, a countless quantity of good decorative forms to be found in such details as those with which Colonel Jacob has enriched his six folios of 374 plates. This vast collection has been issued at the cost of His Highness the Maharaja Sawai Madhu Singh, G.C.S.I., of Jeypore, and a special interest attaches to the work from the fact that all the drawings have been produced by native artists trained by the head-master, Mr. Opendra N. Sen., at the Jeypore School of Industrial Arts—an institution which was founded by the Maharajah Sawai Ram Singh, the father of the promoter of this publication. The designs which are thus brought together in uniform scale are compiled chiefly from old buildings in Rajputana, one of the protected states of North-west India, and they are divided into sections, thus:—Part 1, Copings and Plinths; Part 2, Pillars, Caps, and Bases; Part 3, Carved Doors; Part 4, Brackets; Part 5, Arches; and Part 6, Balustrades. We may say at once that unqualified praise is due to the Maharajah for his zealous endeavour to bring the indigenous arts of his country before the world in this highly practical manner, and to thus secure a valuable as well as reliable record of their wonderful detail. He is certainly distinguished among the native rulers of India as the first head of a State who has caused to be produced a technical book on Indian architecture for the benefit of his own people, and of art students throughout this country and America. We have to-day reprinted, to a reduced size, by permission, one of the plates from Part No. 3, giving the details of a beautifully-wrought door from the Amber Palace at Jeypore. By this means we shall the better enable our readers to judge of the character of the plates to which these notes have reference. The drawing in the centre of the sheet, Fig. 1, represents one leaf of a door in outline, showing the arrangement of the panelling, which seems admirably proportioned. Each of the panels A, B, C, D, E, and F is most delicately carved, and Colonel Jacob's book likewise gives the designs of each panel to a good workable scale. Figs. 2 and 3 represent the overlap bar, and sections are also added below. "Amber Palace is situated in the Hills, about five miles north of the present capital, Jeypore; it was originally held by Bhatu, the chief of the Susâwat Minas, a local race in Rajputana, and is naturally a strong position. It was wrested from them by Maidal Rao, a Kachhwaha chief, about the middle of the 12th century. The Amber Palace was founded by Raja Mansingh, and was the chief residence, although at first it had no buildings of any pretension. In A.D. 1630 Mirza Jaysingh erected the Jaya Mandir and other beautiful buildings, which make it rank with Gwalior as one of the finest specimens of Rajput architecture. In A.D. 1728 Maharajah Sawai Jaysingh—one of the most illustrious princes of India, famous for his study of mathematics and astronomy, and as a ruler who did more to promote sound science than any other Hindu prince on record—founded the modern capital of Jeypore, and Amber was gradually deserted, and, with the exception of the palace buildings and a few temples, is now more or less in ruins." The palace buildings contain numerous courts and suites of apartments, some of them small, and reached thrcugh intricate passages; others extremely beautiful, and "enjoying from their windows, balconies, and terraces," says Heber, "one of the most striking prospects which can be conceived. For varied and picturesque effect, for richness of carving, for wild beauty of situation, for the number and romantic singularity of the apartments," he adds, "I am able to compare nothing with Amber!" The doors of the Palace of Amber, chiefly in the Zanana part, are some of them inlaid with ivory and ebony, and others are carved in blackwood. The workmanship, as regards framing, is very rough; but, as may be seen from the plate, they are remarkable for the variety and beauty of the designs of the carved portions. Unfortunately, from exposure and neglect, they are all more or less decayed, and in a few years will probably be entirely lost. The author adds: "It is with the hope of rescuing these designs from oblivion, and placing them on record, that these drawings are now produced." The doorways are of stone or marble. The doors are usually fitted by a pivot at top or bottom, on which they swing. They are of a great variety of shape, and the upper parts for the most part are made to fit the corbelled stone lintels of the doorway openings. To enumerate the several specimens which Colonel Jacob has arranged would take more space than we can here give to the subject, though we may name, in conclusion, a few of the buildings which he has chosen for illustration in detail—viz., the Motix Masjid in the Lal Kila, or Fort at Delhi. Mirza Jahangir's Tomb at Nizam-ud-din, near Delhi; the Jagatsarwan Mandir, at Amber; the Madhu-Bilas, Jeypore; the Cenopath of Maharajah Sawai Jaysingh, at Jeypore; Singhaji's Mandir, at Sangauer; the College of Itimad-ud-daulah, at Delhi; the Jama Masjid, at Agra; the Chaksu, Jeypore State; the Suraj Pol, at Udaypur; the Jodhbhai's quarters, at Fatehpur Sikri; the Cenotaph of Santoji, at Pushkar, near Ajmir; and many more well-known examples. Some of the plates are beautifully printed in colours by Mr. Griggs, and the sheets representing the inlay work are specially successful. These working drawings are shown on separate sheets, so that they may be placed before the student out of the portfolios, and for this reason the author has devoted a plate to almost every single detail. There can be no pecuniary profit attending such a publication, and its expense has been met almost entirely by the Maharajah. The cost of each plate in the finished folio, works out, we understand, at about fourpence per copy.

* Jeypore Portfolios of Architectural Details. Compiled by Colonel S. S. Jacob, C.I.E. London: Bernard Quaritch, Piccadilly, W.

CHIPS.

The tender of Mr. A. Groves, of Milton-under-Wychwood, has been accepted for new reading-room at Icomb.

On Saturday a company assembled at the Burcot pumping station of the East Worcestershire Waterworks Company, to witness the starting of a new engine for pumping the supply for the Lickey district. The engine, which was supplied by Messrs. Beck and Co., London, has a pumping capacity of 6,000 gals. per hour. Mr. W. T. Layton is the resident engineer and manager.

A meeting of the Liberal Association for South-West Warwickshire was held at Stratford-on-Avon on Saturday, when Mr. John Fell, contractor, of Leamington, and President of the Allotments and Small Holdings Association, was unanimously chosen as candidate for the division.

Mr. Alfred Groves, Milton-under-Wychwood, is just completing extensive additions and improvements to Oddington Rectory House, Gloucestershire, from plans and under the supervision of Messrs. Waller and Sons, architects, Gloucester.

A new organ, built by Mr. J. J. Binns, of Bramley, Leeds, at a cost of over £2,000, for Eccles parish church, was opened on Saturday afternoon by a special service.

The Wesleyan Chapel at Tuckingmill, near Camborne, a substantial building of granite, erected in 1843, has been reopened after undergoing extension and renovation. The chief work was the addition of a new orchestra and organ chamber, with four classrooms under. The chapel has been re-painted and decorated throughout, the rostrum set back, and the pews and benches on the ground floor removed to make way for open seats of pitch-pine. Mr. Sampson Hill, of Redruth, was the architect. The carpentry was done by Mr. W. H. Moyle, of Chacewater, the masonry by Mr. W. H. Gray, of Illogan, and the decorations by Messrs. J. and W. M. Hichens, of Redruth. The total cost has been over £650.

An extraordinary general meeting of the governors of the Ross Cottage Hospital was held on Wednesday, the 10th inst., Mr. H. C. Moffatt, J.P. (president), in the chair. It was decided to erect an additional wing, the cost of which the committee of the Kyrle Coffee House have generously offered to defray. The plans of Mr. Arthur Pole Small, architect, of Ross, were submitted and approved.

The Established Church at Inchture, about nine miles west of Dundee, was almost totally destroyed by fire on Sunday afternoon. The walls and spire are still standing, but have been greatly damaged. The church was built nearly 60 years ago.

Part of a new cemetery for Scotforth, Lancashire, was on Friday last consecrated by the Lord Bishop of Manchester. A small mortuary chapel has been erected near the entrance gates at a cost of about £500, the whole of the works being carried out from designs by, and under the superintendence of, Mr. E. Howard Dawson, A.R.I.B.A., of Lancaster.

The memorials to the late Rev. Henry White, the popular chaplain to the House of Commons, will take the forms of a stained-glass window and inscribed brass in the Savoy Chapel, and a mosaic in the chapel of King's College, London.

Considerable improvements have been made to the Home Farm House and buildings at Sherborne, Gloucestershire (according to drawings and specifications from the estate office), for the Right Hon. the Lord Sherborne. Mr. A. Groves, of Milton-under-Wychwood, was the builder.

Building Intelligence.

Barry.—On Thursday, the 11th inst., the new market at Barry, Glam., was formally opened. The buildings have frontages to Barry Dock-road, West-street, and High-street, and form part of a larger scheme which has for its object the erection of market buildings, 166ft. in length by 74ft. in width. The portion now completed comprises a market-hall, 74ft. in length by 40ft. in width. Shops, with a room above each, are arranged on both sides and at the front of the hall, the total number being seventeen. The internal portions of the walling to the hall are faced with red brick, and are divided into bays on one side, with pilasters and arches over, with windows in the centre of each bay lighting the rooms over the shops. The light to the markets is principally obtained from glass in the apex of the roof and clerestory windows. The height is 33ft. to the springing of the roof and 48ft. to the apex. The interior will be warmed with hot-water pipes by Mr. E. Hampton, of Abergavenny. As used for concerts, the central hall will accommodate 550 on the ground floor and 130 on the balcony. The style adopted has been Queen Anne, freely treated, with moulded cornices, stringcourses, &c., the walling being faced with red brick relieved with Bath stone. The work has been carried out by Messrs. C. Shepherd and Son, of Cardiff, at a cost of £3,672, from designs by and under the superintendence of Messrs. W. G. Habershon and Fawckner, of London, Newport, and Cardiff.

Bradford Abbas.—The 15th-century parish church, which was closed during last summer for alterations and repairs, was reopened by the Bishop of Salisbury on Thursday, Dec. 11th. The restoration has been effected from plans prepared by Mr. C. B. Benson, Mr. J. Andrews, of Thornford, being the contractor. The chantry was first taken in hand, and was reopened in May. The carving has been mainly done by Messrs. Grassby and Son, of Dorchester, and six of the angels by Mr. Harry Hems, of Exeter. The painting and decoration of the interior of the edifice have been carried out under the personal superintendence of Mr. W. Raymond (Raymond and Penny, Yeovil). The total outlay has been £1,700.

Ipswich.—The new bank erected on the Cornhill for Messrs. Bacon, Cobbold, Tollemache and Co. was opened on Monday. It occupies the centre of the north side of the main square of the town, facing the town hall, Corn Exchange, and post-office, and facing the approach from the railway station, and adjoins new business premises similar in style from the designs of the same architect, Mr. T. W. Cotman, M.S.A., of Ipswich. The style is an adaptation of French and Flemish Renaissance, carried out in rubbed and glazed brickwork, with Portland stone dressings. The building is four stories in height, the ogee-headed windows being divided vertically by fluted stone pilasters and horizontally by deep entablatures. Above the parapet are dormers and gables of elaborate scrollwork design, and the centre of the steep-pitched roof is broken by a flèche, the total height from the pavement being 70ft. to top of gable, and 93ft. to finial on flèche. The banking-room is 58ft. by 33ft. 6in., and 20ft. 6in. in height. Four columns, inclosed in fibrous plaster castings, support the cross walls of the floor above; the ceiling is deeply moulded, and divided into parallelograms by beams with bold cornices, and there are pilasters all round the room which connect a frieze adorned with arabesques. The dado is of Spanish and Tobasco mahogany, and the pedestals of the principal columns, which form the dividing line of the counters, are similarly inclosed. In the rear of the banking-room is the manager's apartment. It is shut off by a glass partition, and lighted from the roof. Mr. R. Girling was the chief contractor; Mr. Fred Bennett built the walls and vaults of the basement and strong rooms: the electric light has been installed by Messrs. Laurence, Scott, and Co.; Mr. E. Harvey provided the hot-water apparatus; and Messrs. C. Kite and Son the ventilators. Mr. Sidney Elms, of London, has done the stone carving, and Messrs. Jackson and Sons, also of London, executed the moulded fibrous plaster, largely used in the internal ornament.

Engineering Notes.

The Nicaraguan Canal.—Work has been going on rapidly during October on the various branches of construction, &c., connected with this canal. By the end of the month the railroad bridge across the San Juanilla river had been completed, and the road was being built beyond the river, where for some distance the work is comparatively easy. Two vessels had arrived with piles, &c., for the breakwater. The six dredges in use are eventually intended to cut the canal; but in the meantime are doing important work in connection with the opening of the bar. The City of Paris dredge is cutting a channel from the deep-water basin at present existing at Le Fé to a position selected outside the outer bar. She had progressed 900ft., having cut a channel 120ft. wide and 20ft. deep, and had thrown up an embankment of sand on either side of her. Several other dredges will follow her, and the channel, once cut through, can be kept open, and steamers of 17ft. and 18ft. draft enabled to enter the port. When this has been done the main difficulty—viz., that of transporting here the heavy machinery which will be necessary as Mr. Menocal's operations progress—will have been disposed of. The most important event, however, is the completion of the work of the commission appointed by the Nicaraguan Government to examine the work done and to certify that the expenditure stipulated for in the concession has been made. Nearly double the amount stipulated for by the Nicaraguan Government on granting the concession has been expended, and the commission has finally confirmed the concession, and the Nicaragua Canal Company have now a period of ten years in which to complete the work.

Penshaw Bridge, Sunderland.—This bridge over the river Wear at Penshaw Staiths, near Sunderland, consisting of iron bow girders 155ft. in length, supported by Marsden limestone ashlar abutments resting on concrete and pitch-pine piled foundations to a depth of 20ft. under the bed of the river, is now rapidly approaching completion, and is expected to be open for traffic about the end of the year. The whole of the works have been designed by, and carried out under the superintendence of, Mr. D. Balfour, M.Inst.C.E., F.G.S., St. Nicholas Buildings, Newcastle-on-Tyne. The contractors for the masonry, piling, and iron-work are Messrs. Head, Wrightson, and Co., Stockton-on-Tees; and for the approach roads, Mr. J. Carrick, Durham.

CHIPS.

At the last meeting of the Darlington town council, Councillor G. G. Hoskins, F.R.I.B.A., moved that a resolution adopting plans by the borough surveyor for the extension of the town hall and alterations to the public offices, be rescinded. He showed an alternative scheme of his own, and criticised the adopted plans in detail. The matter was referred back to the Markets Committee, to which Mr. Hoskins' name was added.

At the last meeting of the local board for Rugby it was decided to pay to the widow of the late surveyor 100 guineas as remuneration for the extra work entailed by the superintendence of street improvements done by her late husband.

A new police-station has been erected at Gillingham, and special attention has been paid to the ventilation, the extraction of the vitiated air being effected by the latest improved form of Messrs. Robert Boyle and Son's patent self-acting air-pump ventilator.

Newland Congregational Chapel and Schools, Lincoln, were reopened last week after the erection in the chapel of an organ gallery, and a new organ and decorating the walls and ceiling. The adjoining schools and vestries have been remodelled and enlarged. Mr. P. Bellamy, of Lincoln, was the architect, Messrs. Salt and Nicholson, of the same city, were the contractors for the alterations to chapel, and Messrs. Wright and Sons for those in the schools.

Important additions have just been completed to the Grammar School buildings at Burford, Oxon, by Mr. Alfred Groves, builder, Milton-under-Wychwood. Messrs. Waller and Son, of Gloucester, were the architects.

Mr. S. Lees, the Mayor of West Bromwich for 1889-90 and the present year, died suddenly on Saturday last. He was associated with his brother, Mr. J. B. Lees, in business as timber merchants and iron manufacturers.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Birmingham Architectural Association.—At the last meeting of this association the President, Mr. T. Naden, delivered an address in which he referred at length to the growth and development of the city up to the earlier part of the 19th century. Beginning with the mention of Birmingham in Domesday Book, and of the weekly market held in the 12th century, Mr. Naden passed rapidly over the earlier periods of the growth of Birmingham till the stirring times of the 17th century, in which the old Ship Inn and Stratford House at Camp Hill were well-known houses on the outskirts of the town. In 1689 the first Dissenting chapel was built in Old Meeting-street, followed by a second in three years' time in Digbeth, and about the same time the Roman Catholics built a chapel and convent near the present St. Bartholomew's Church. Both these were almost immediately destroyed, and in their place a chapel was built at Edgbaston. From this time onwards the growth of Birmingham was rapid and steady, and before the close of the 17th century there were six churches or chapels in the town. St. Philip's Church was finished in 1719, and in 1731 that and St. Martin's and the newly-built Grammar School were the most prominent buildings in the town. Mr. Naden was able to show, by means of the surveys of Wesley and Bradford, and those of the present time, the growth in the next hundred years, and concluded his address by a tribute to the genius and labours of the manufacturers and inventors to whom Birmingham owed her greatness. Hearty thanks were, on the motion of Mr. H. R. Lloyd, accorded to Mr. Naden.

Edinburgh Architectural Association.—A meeting of this association was held on Thursday, the 11th inst., Mr. John Kinross presiding. Ten new members were admitted. Councillor Mackenzie read a paper on "Heating of Buildings by Hot Water and Steam," his opinion being that there was no advantage in using steam for ordinary buildings, while there were many disadvantages, and always considerable risk. The merits of various shapes of boilers were discussed, and the subject of mechanical ventilation, combined with heating, was touched upon. The paper was illustrated by diagrams. A discussion followed. The prizes gained by the successful students for last year were afterwards distributed.

Sheffield Society of Architects and Surveyors.—Mr. J. B. Mitchell-Withers, F.R.I.B.A., last night read a paper before the meeting of the above Society on "The Development of Ornament in English Mediæval Architecture." There was a good attendance of members and others, including Mr. F. Fowler, president, Mr. C. J. Innocent, vice-president, Messrs. E. M. Gibbs, Potts, Winder, jun., Smith, Hemsoll, H. Webster, Benton, McDougall, Wigfull, H. Tooley, A.R.I.B.A., Mr. J. T. Cook, and others. He introduced the subject by stating that a knowledge of the historical development of the various styles was absolutely necessary to the artist, and he proceeded to carry out that view by tracing the history of ornamental English architecture. He cited the principal characteristics of the English styles, adopting the simple nomenclature of Rickman, and divided the periods into Norman, Early English, Decorated, and Perpendicular. He instanced the principal English buildings in which these types are exemplified, and there were lantern-slide illustrations (prepared principally by Mr. Mitchell-Withers, jun.) showing specimens of ornament in detail, and groups of each period found in various notable buildings. An interesting discussion took place, in the course of which Mr. Tooley, remarking on the lecturer's criticisms of the flint panelling work seen in Norfolk and Suffolk, thought the lecturer judged it too harshly. He admitted that its appearance was much improved by the hand of time.

Prince Victor of Hohenlohe has almost ready for transference to marble the plaster statue of the Princess of Wales which is to be placed in the vestibule of the Royal College of Music. The Princess of Wales is represented arrayed in the robes of a Doctor of Music of the University of Dublin. The square of the college cap crowns the head, and the Princess, holding in her left hand a roll of music, catches with her right at the folds of her doctor's gown.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the Building News, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

Cheques and Post-office Orders to be made payable to J. Passmore Edwards.

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Advertisements for the current week must reach the office not later than 3 p.m. on Thursday. Front-page advertisements and alterations in serial advertisements must reach the office by Tuesday Morning to secure insertion.

NOTICE.

Bound volumes should be ordered early (price Twelve Shillings each), as only a limited number are done up. A few bound volumes of Vols. XLI., XLIX., L., LI., LIII., LIV., LVI., and LVII. may still be had, price Twelve Shillings; all the other bound volumes are out of print. Most of the back numbers of former volumes are, however, to be had singly. Subscribers requiring any back numbers to complete volume just ended should order at once, as many of them soon run out of print.

CHRISTMAS DAY.

Next week, in consequence of the Christmas Holidays falling on Thursday and Friday, December 25 and 26, it will be necessary to publish the Building News on *Wednesday*, December 24. All advertisements and other communications for the next issue must therefore reach us by 3 p.m. on *Tuesday*, December 23.

Received.—Rev. F. G.—R. B.—C. H. S.—T. J. M. F.—S. and Co.

Correspondence.

PATENTED PLANS.

To the Editor of the Building News.

Sir,—We are of opinion that Messrs. Flockton and Gibbs' exhaustive letter, published last week, does not alter in any way the plain facts stated in yours of the week previous. The essential qualities of their "patent plans" have been previously embodied by other architects, and the examples we quoted are sufficient verification of this.—We are, &c.,

Leeming and Leeming.

Victoria House, 117, Victoria-street, Westminster, Dec. 15.

Sir,—In my letter to you of November 14, I referred to the Houses of Parliament, amongst other buildings, as an anticipation of Messrs. Flockton and Gibbs' patent application No. 19624 of 1889. If correct, this disposes of their case.

In their letter in your last issue, Messrs. Flockton and Gibbs deny the applicability of this reference, on the ground of the limitation contained in their provisional specification, which disclaims hospitals, workhouses, asylums, prisons, palaces, and mansions, where "the public have little or no business, and are generally admitted only by special permission." Nor is their invention applicable (they say) to museums or galleries where the public are admitted unreservedly, and wander unrestrictedly. But "it is applicable only to such buildings as have general or inquiry offices by or through which the public have entrance to the private offices."

It is clear, from the above, and from an examination of their specification, that those gentlemen have sought to patent not only a certain principle of arrangement in buildings (or combination of these principles, as they put it), but also the *use* to which a building so planned is put to afterwards. So that while they disclaim, let us say, Milbank Prison, yet, if the London County Council acquires it and converts it into municipal offices, they will then be entitled to their royalty! Again, let us suppose the Sheffield buildings erected upon Messrs. Flockton and Gibbs' three principles, and liable to their claims, and, further, that before their use for municipal purposes they are employed for a time as an art museum and picture-gallery (as the Leeds Infirmary was some years ago), their limitation would apply in that case to their loss; yet in neither of the instances given could they, either as architects or inventors, have any control over the use to which the buildings are put.

The title and claims cover "buildings applicable to *Government*, county, municipal, and other public offices and courts." Certainly, the Houses of Parliament would be considered a Government building, and therefore may be cited as anticipating their claims; yet, technically, it is also a royal palace, and as such is disclaimed by Messrs. Flockton and Gibbs. So this building is claimed and disclaimed in the same specification; but seeing that Sir Charles Barry here carried out the three principles claimed—(1) building in wings, (2) a central public hall, and (3) entrance to the wings through an inquiry office or lobby, it follows that there is no patentable novelty in applying the same arrangement to other classes of public buildings.

I hope that nothing I have said will be construed as a reflection upon Messrs. Flockton and Gibbs, who, indeed, have gone out of their way, and at some expense, to be perfectly fair to the profession. They have as much right as other inventors to protection under the Patent Law; and had it not been for their public challenge, and the peculiar interest I have on both sides of the question, I should not have engaged in the ungracious work of criticising their claims to a patent.—I am, &c., J. Sinclair Fairfax.

433, Strand, London, W.C., Dec. 15.

Sir,—A great deal has been said, written, and published anent the patenting of certain plans by Messrs. Flockton and Gibbs. May I ask if any of the objectors have been game enough to lodge the necessary *formal* opposition against the granting of the patent?—I am, &c.,

A Constant Reader.

COMPETITIVE DESIGNS FOR RENTON PARISH CHURCH.

Sir,—The above competition has just been decided. The church was only to cost £2,600, and the designs were to be submitted under mottoes only. As the committee, immediately on receiving the plans, disclosed the names of all the authors, and as the competition has been the subject of considerable talk in architectural and building circles, I think it right that the facts should be made known. This may be done in a sentence or two, and I shall not transgress on your space in order to impute motives, or to call the action of any one in question.

The committee sent the designs placed first, second, and third in order of merit to their measurer, to ascertain their cost. He reported that not one of them could be carried out for much less than £4,000, the cheapest being the third, at £3,900. They thus violated the condition as to cost. The authors of the design placed third, Messrs. H. and D. Barclay, of Glasgow, in submitting their design, said it could not be built for less than £3,000. They thus openly violated the condition as to cost. Messrs. Barclay are now appointed the architects; but they have to undertake the task of proving that the committee's professional adviser knew so little of his business that he made a mistake of £900. The committee now intend to spend £3,000, thus showing their own condition as to cost "cast overboard." Their measurer reported that my design would cost £2,570, or £30 less than the stipulated sum. It was thus the only design among the first four which complied with the conditions of this architectural contest.

I am quite content to lose the church in these circumstances, and I am grateful to the minority on the committee, whom I do not know, for their honourable support, and for their desire to secure my appointment.—I am, &c.,

P. MacGregor Chalmers.

176½, Hope-street, Glasgow, Dec. 16.

THE CISTERCIAN ABBEY OF ST. MARY AT QUARR.

Sir,—With the owner's permission, I have started excavating the site of the Cistercian Abbey of St. Mary at Quarr, in the Isle of Wight, on the lines laid down, after a careful consideration of the "lay of the ground," with so far complete success. The foundations brought to light are apparently those of the great church, the chapter house, cellarium, refectory, dorter, calefactorium, kitchen, and the infirmary. The cloister was of considerable size, 130ft. by 120ft., and we hope to uncover the walls of the Lady-chapel to the east of the great church. The inclosing walls of the monastery comprise within them an area of nearly 40 acres, and are in sufficient evidence to be easily traced, though the ground unfortunately has for many years been used for farming purposes. The abbey was an important one, its abbot sitting in the House of Peers, and was one of the earliest Cistercian foundations in England. On the Dissolution the site was bought by a merchant at Southampton, Geo. Mills, who pulled down the buildings and sold the materials. So thoroughly had he carried out his Vandalic work that 60 years after Sir John Oglander could find little or no trace of the Abbey buildings, *corn*, as he tells us in his "Memoirs," *growing on the site.*

Although the stones have, in many cases, been entirely removed, we have come upon the concrete bed on which they lay, 5·6 thick.

So far, the cost of excavating has been defrayed by myself; but our find has naturally impelled us to further researches, towards the cost of which I must appeal for outside help, or the work will have to be abandoned, being of too extensive a nature to be supported by my "private purse."

To carry out my object in a thorough manner a *large* sum will not, I am of opinion, be necessary, so that any contribution, however small, will be of assistance in defraying the cost.

Sincerely trusting that those who are interested in the history of the past will not allow so important an archæological undertaking to fall to the ground for want of support,—I am, &c.,

Percy G. Stone,

16, Great Marlborough-street, S.W.,
To whom all communications may be addressed.

P.S. — Careful drawings of everything of interest that may be met with, as well as a correct plan of the site and building, and an exhaustive history of the Abbey itself, will be published in my forthcoming book on the "Architectural Antiquities of the Isle of Wight."

THE LATE JOHN BENNETT, BUILDER.

Sir,—Referring to the paragraph in your last issue which records the death of Mr. John Bennett, builder, of Ipswich, I may be allowed to add—as a fellow pupil of his—that in early life he passed some time in an architect's office, having been articled to the late Harry Woolnough, architect, and at that time county surveyor of Suffolk, and contemporary with Fredk. Barnes and R. M. Phipson, architects, practising in Ipswich, all men of mark in their day.

Although not excelling greatly as a draughtsman, young Bennett was possessed of considerable constructional ability, and became both shrewd and clever as a man of business. He never followed the profession, as he preferred building to architecture. There was not sufficient money to be made at the latter to please him. In this respect his views were amply verified, as he was enabled to retire from the business some years before his death.—I am, &c., Robert Clamp, A.R.I.B.A.

Woking, Surrey.

At Tuesday's meeting of the London County Council it was reported that Mr. Blashill, the superintending architect, had made a report upon the structural condition of the Gaiety Theatre. Mr. Blashill had been instructed to communicate with Mr. C. J. Phipps, F.S.A., who represented the owner and the lessee of the theatre.

Additions have been made to St. Mary's Mills, Norwich, and special attention has been paid to the ventilation, which is carried out on the Boyle system, the latest improved form of the self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

Intercommunication.

QUESTIONS.

[10457.]—**Pointing during Frost.**—Is there not some preparation of mortar that will enable this to be done with as good effect as in ordinary temperature?—Frost.

[10458.]—**Torching Inside Old Roof.**—What is the best mortar for this purpose? Can asphalte and pitch, or kindred materials, be used with equal facility and better result. If so, how?—Frost.

[10459.]—**Quantities.**—Could any of your numerous readers tell me if, when architects supply quantities, the client can legally demand a copy of accepted contractor's figured quantities, to base any addition to, or deviation from, same? A reliable answer will greatly oblige.—One in Perplexity.

[10460.]—**Powers of Local Authorities.**—What are the powers of local authorities respecting building line according to recent Acts, and what is the best and briefest information I can get upon this? For instance, the buildings upon my right and left are 20ft. to 30ft. from road: can I build within three or four feet or right up, and can I bring out the front of my property? Acts of Parliament are uninteresting in their detail; perhaps you could tell me in a few lines, and oblige.—A. P. Jevon.

[10461.]—**Water Engineering.**—Will some engineering readers kindly give me their advice as to what books are the best treating on the works of water supply to large towns?—Student.

[10462.]—**Ranging Curves.**—Will any of your readers give a convenient and simple mode of setting-out curves for sewers, footpath kerbings, and similar town work? The formulæ for railways hardly apply to the above, the former being for long radii, while street kerbs and sewers frequently range from 40ft. to 150ft. The method should apply to cases in which the centre of the circle and the point of intersection of the straight lines of sewer or kerb are inaccessible.—Municipal.

REPLIES.

[10450.]—**Ventilation.**—I was very much amused with the answer Mr. Buchan gave to "Rustycuss" in your last issue. I would say, provided always a sufficient quantity of fresh, warmed air is poured into the building, there is not the slightest objection to extracting the vitiated air at the floor level through vertical gratings. This system I have many times carried out, and may add it has always proved successful. In winter it is better to extract at the floor level, as you get a better diffusion of the air, and as the air costs so much in warming, it is wise to extract as much of the heat from the air as possible before it escapes from the building and is lost. In summer this is slightly different, as the incoming air has not to be warmed, and it is usual to get it away as soon as possible; but this is the most troublesome part of ventilation, as by far the most part of automatic ventilators cease to act in summer time. I can give "Rustycuss" many instances of bottom extraction, and which have proved most efficient, and in some cases far exceeded my expectations. If proper precaution is taken with the arrangement of the building while it is on paper, there ought to be no difficulty in designing a heating and ventilating apparatus to suit its requirements, however peculiar the design and requirements of the building may be. Further, it can be made so that the occupants need not fear "the exhalations from the lungs and gas-lights," especially when the inside air is "so largely diluted," which, I presume, Mr. Buchan means with fresh, external air. An eminent English authority says:—"The example shows that extraction shafts should be placed as to cause a circulation of air such as is effected by a fireplace, which acts to cause a circulation and to extract the air." In another part the same well-known author says:—"In cold weather the extraction should generally take place from the lower part of the room, so as to draw off the cold air from near the floor, and cause the warm air above to circulate." My experience has led me to believe that there is too much of this so-called roof or top ventilation. If "Rustycuss," and others like him, will only spend a little time in becoming thoroughly acquainted with the principles of heating and ventilation, they will soon understand what systems to adopt and what systems to discard.—David M. Nesbit.

[10451.]—**Gas-Stove.**—"Caloric's" stumble is due to the condensation of the products of combustion. The flue-pipe is evidently in a cold room, which causes the gases inside the pipe to condense. The only plan to prevent the water running out at the joints is to wrap the pipe well with some good non-conducting material. I should prefer thin sheet asbestos, and secondly, hard felt. Even then you may have a little trouble with the water.—D. M. Nesbit.

[10454.]—**Hot-water Pipes.**—A low-pressure hot-water apparatus is usually known by the term "not hermetrically sealed," and in contra-distinction to the Perkin high-pressure system. The water is not 212° F. in any part of your apparatus, consequently no steam is being formed; and what extra pressure there is is being continually relieved by your escape-pipe at top. The case you cite is a *low-pressure system, pure and simple.*—David M. Nesbit.

[10454.]—**Hot-water Pipes.**—Supposing the hot-water supply circulation is for a large dwelling-house or a hotel, and the building being more than 40ft. high, so that the cold-water supply cistern to the boiler is 40ft. higher, than the boiler; yet if the expansion-pipe rises upward in every part of its course, so that any steam generated in the boiler can rise up freely and easily without any check through the expansion-pipe, and so get free and ready exit at its top—then I consider that this is merely low pressure, although the height of the cistern above the boiler be 40ft. This height of the cistern above the boiler is quite common in hundreds of four-story self-contained dwelling-houses in Glasgow. To keep the hot-water pipes 3in. from the wood would be pure bunkum, in my opinion; but it would be a good thing to wrap the hot pipes in strips of strong flannel felt, to conserve the heat and protect from frost, and they may lie on wood.—W. P. Buchan.

[10454.]—**Hot-water Pipes.**—Your district surveyor is wrong. The apparatus is a low-pressure one. The "ample expansion" pipe is not necessary. Your open-top cistern is the expansion pipe, and if your circulating pipes are right, you may fire as much as you can and boil the water in the "open top cistern"; but your pipes will nowhere exceed 212°. 40ft. head of water will give a good pressure in the boiler, but it cannot be called a high-pressure system.—A. P. Jevon.

[10454.]—**Hot-water Pipes.**—Your correspondent's query as to whether the head of water affects the temperature at the lowest point in a system of circulation, is one that must first have been suggested by those only acquainted with the operations of steam. It is known by all intelligent hot-water engineers that, with an open cistern and a properly arranged system of circulation, it is not possible to heat the water beyond 212°, even although the head of water should be 100ft.—i.e., assuming that the boiler is not too large for the work required. The difference in the temperature between the lowest point (the boiler) and the highest in the flow-pipe will be the amount lost by radiation in travelling the greater distance.—Robert Crane, 6, Binfield-road, Clapham, S.W.

[10455.]—**Legal.**—See *Transactions* Surveyors' Institution, Vol. XXI. Parts 4 and 5, to be obtained of the Secretary, 12, Great George-street, Westminster, S.W.—R. Watson.

WATER SUPPLY AND SANITARY MATTERS.

Dwellings of the Poor in Shoreditch.—The inquiry ordered by the Home Secretary, at the instance of the Mansion House Council on the Dwellings of the Poor, into the sanitary condition and requirments of the parish of St. Leonard, Shoreditch, was resumed on Monday at the Shoreditch Town Hall, Old-street, the commissioners being Mr. Cubitt Nichols, M.S.A., and Dr. Edward Seaton, with whom, as assessors, were Messrs. Ebenezer Moffatt and Brabner, the latter being appointed by the Shoreditch Vestry. The first sitting was held early in November, and the case for the Mansion House Council having been opened, the commissioners adjourned in order to make a thorough inspection of the parish, especially those parts which had formed the subject of the Mansion House Council's complaints. On the resumption of the inquiry on Monday, Dr. Louis Parkes stated that many of the defects complained of by the Mansion House Council had been remedied, but the sanitary staff of the parish was even now insufficient to cover all its requirements, one of which was that there ought to be a sanitary inspection of the parish, say twice a year. The reduction of the death-rate—from 20·8 per 1,000 in 1885 to 19·22 in 1890—did not show that things were getting worse. The Rev. F. E. Spencer, vicar of All Saints', Haggerston, thought that an improvement could be effected in the working of the sanitary laws, especially by enforcing a house-to-house inspection, which should certainly take place not less frequently than once every year. He did not consider that the sanitary staff of Shoreditch was sufficient. Mr. Lewis Thomas addressed the commissioners on behalf of the Shoreditch Vestry, and submitted that the sanitary administration of the parish, both past and present, was good. He recounted the steps taken for sanitary purposes by the authorities during the last ten years. Dr. Sutton, medical officer of health, detailed the sanitary work carried out in the parish of Shoreditch during the 25 years he had filled that position. The inquiry was adjourned.

Erdington Sewerage.—These works have just been completed at a total cost of £4,093 11s. 7d. The sewage is conveyed by pipe-sewers into the Birmingham system, and puified on the Birmingham Sewage Farm. This arrangement necessitated some sewers from 30 to 40ft. deep, and special precautions had to be taken. The engineer to the works was Mr. W. H. Radford, C.E., of Nottingham, and the contractor was Mr. G. Law, of Kidderminster.

The *World* announces that Mr. Calder Marshall, R.A., has placed his resignation in the hands of the President, and will forthwith join the ranks of the "retired." He is the Nestor of the Royal Academy, having been elected Associate in 1844, and full Academician in 1852, eighteen years before Mr. Hook, who now becomes the senior member of the Academy.

A three-light Decorated window in St. John's Church, Cardiff, has been filled with stained glass, in memory of the late Col. W. H. Martin. The subject is our Lord receiving the alabaster box of ointment, and the artist was Mr. J. W. Dixon, of University-street, N.W. The dedication took place on Sunday last.

By an overwhelming majority of more than ten to one, the ratepayers of All Saints', Poplar, have resolved to adopt the provisions of the Free Libraries Act.

The death occurred on Monday, in Paris, of M. Eugène Charpentier, the well-known historical painter, aged 80 years.

LEGAL INTELLIGENCE.

Re George Wall.—(London Court of Bankruptcy, Dec. 16, before Mr. Registrar Linklater.)—The bankrupt was a builder and contractor at Kentish Town, trading as Wall Brothers. He filed his petition in September last, and now applied for his order of discharge. His liabilities are returned at £13,088, and the assets are estimated as likely to realise £3,861. The bankrupt commenced business as a builder in 1866, and it appeared from the Official Receiver's report that he was a very illiterate man, being able only to read slowly and scarcely able to write his own name. He attributed his failure to losses on contracts incurred since 1882, such losses amounting, in respect of seven contracts, to no less than £12,627 18s. 6d. He did not attribute the losses to miscalculations in the estimates on the part of those he employed, but to the condition of the country, the state of trade, and of the labour market, and—as to the largest of the losses—to the delay in procuring terracotta from Wales. In addition to the above losses the bankrupt stated that he had lost £2,350 in respect of a house built by him for his own occupation. The house was elaborately embellished, and was estimated to have cost £4,300. The Official Receiver submitted, having regard to the magnitude of the bankrupt's transactions, that he had been guilty of improper conduct, amounting to culpable negligence, in not having taken steps to acquaint himself with his position from time to time. It appears that the bankrupt had entered into various contracts with the London School Board, and proceedings were recently taken by the Board against the bankrupt in respect of the alleged deviations by him from the terms of the contracts, defective workmanship, and the use of inferior materials—damages to the amount of £13,000 being claimed upon one contract alone. Mr. Houghton, for the trustee, said there were matters of serious gravity into which he desired further to inquire, and he asked for an adjournment. Mr. E. C. Willis, Q.C., on behalf of the London School Board, supported the application. Mr. F. C. Willis, who appeared for the bankrupt, submitted that no sufficient reason had been given for delay. The bankrupt naturally desired to be in a position to go into business again as soon as possible. His Honour adjourned the application to the 21st of January.

Unapproved Plans and Bad Bricks.—At Lawford's Gate Petty Sessions, on the 1st inst., John B. Maclaine, builder, was charged by the local board of St. George's, near Bristol, with commencing the erection of a building in Washington-avenue, Easton, without giving notice or delivering plans and sections, and also with not using proper materials. Mr. T. L. Lewis, surveyor to the local board, proved the case, stating that some of the bricks used crumbled away in his hand; they were "the most inferior" bricks he ever saw used for building. Defendant's foreman asserted that the bricks produced were very good for plastering, and was corroborated by Wm. Lesseymore, surveyor of Clifton; Frederick Rumball, dealer in building materials, and W. Graham, bricklayer. It was also contended, as to the first charge, that there was nothing in the by-laws to prevent a building being commenced before the plans were approved. The Bench thought otherwise, and fined defendant, for the breach of by-laws, 20s. and costs, and adjourned the second case until the 15th inst., when, after an inspection of the premises, they inflicted a further fine of 20s., with three guineas costs.

Re W. L. Kellaway.—The bankrupt, a builder and contractor, carrying on business at Pentonville, filed his petition in September last, and applied on Dec. 12 for an order of discharge. The unsecured debts amounted to £3,148, and debts fully secured £29,532, and the assets were estimated to realise £676, after providing for preferential payments. The bankrupt commenced business in 1881 with £500 capital, and traded successfully until the beginning of 1888, when he estimates he had a surplus of about £2,750. In February, 1888, he entered into a contract with a committee representing the costermongers of Islington for the erection of a block of costermongers' dwellings. The outlay incurred by the bankrupt on the dwellings was about £10,000, but he failed to obtain repayments, and the mortgagee was in possession. Various charges were made, but Mr. Registrar Brough held that the only one which had been substantiated was that of the insufficiency of the books, and upon that ground he suspended the bankrupt's discharge for twelve months.

Ventilating Shafts on Houses.—At Kensington Petty Sessions last week a case of interest to householders was heard. Messrs. Simpson are carrying out certain drainage works at a house in the Holywood-road, South Kensington, and have done everything to satisfy the demands of the local authorities with the exception of providing a ventilating shaft in front of the house. For non-compliance with this requirement by the vestry's surveyor, a summons was granted by the Bench, and partially heard a month previously, when the case was

adjourned for the attendance of expert evidence and counsel. Mr. William Weaver, surveyor to the Kensington Vestry, and Mr. Bruce Scott, surveyor to the St. Pancras Vestry, having given evidence in support of the summons, Mr. Bodkin argued that the section of the Act of Parliament had been strained by the vestry, who were endeavouring to get his client, a private individual, to ventilate a sewer, whereas that work was cast upon the local authorities. If this pipe were constructed it would be an intolerable nuisance to his client, who would have to ventilate the whole sewer. Mr. Peter Dollar, architect, was called, and said a pipe of this kind would be a death-trap. He had done work in Kensington, Hammersmith, St. Pancras, and, in fact, over all London, and had never known such pipes demanded. He would go farther and say that he had carried out work in Kensington, and had never been required to provide a pipe of this character. He believed the intercepting trap in existence to be perfect. In answer to Com.-Gen. Downes, Mr. Bodkin said his chief argument was that this pipe, if erected, would not affect the existing drain, as there was an intercepting trap and a siphon already in existence. Mr. Austin relied on the strict words of the Act, which included "the safe and proper working of the drain," and asked the Bench not to tie the vestry's hands. The Chairman said the magistrates were of opinion that the pipe was intended for the sewer, and not for the drain, and that section 73 was not wide enough to compel an owner to take such a pipe into a private house.

CHIPS.

The memorial stone of the new wing of the Lady Vernon Schools, Gateshead, was laid on Friday by the Bishop of Durham. The enlargement is the third the school has received in five years, and will accommodate 400 boys. Beneath the floor is a large covered playground. The architect is Mr. Stephen Piper, M.S.A., Eldon Chambers, Newcastle-on-Tyne.

Preliminary stages are being taken to establish an antiquarian museum for Aberdeen. It will probably be formed in connection with the Art Galleries in that city.

A mural tablet of alabaster with an inlaid brass, executed by Mr. Harry Hems, of Exeter, has been placed in the Baptist Chapel at Tiverton as a memorial.

The School Board for Cadoxton-juxta-Barry, Glamorgan, have accepted the tender of Messrs. Symonds and Co., of Cardiff, amounting to £12,344, for new schools to be built in Holton-road. Mr. G. Thomas is the architect.

A new cemetery is about to be formed at Hetton-le Hole, Co. Durham, for the rural sanitary authority of Houghton-le-Spring. Mr. R. Hudson, jun., of Sunderland, has taken the contract for drainage, laying out, and boundaries at £3,690.

The committee appointed to carry out the work of placing a stained-glass window in the chancel of St. James's Church, Horseley Fields, Wolverhampton, as a memorial of the late Alderman W. Edwards, churchwarden of the church for thirty years, have decided to place the undertaking in the hands of Messrs. Heaton, Butler, and Bayne, of London.

Chalford Church, near Stroud, has been repaired by Messrs. Drew, of Chalford, from plans by Mr. B. Edmund Ferrey, F.S.A. The galleries have been removed, the church has been reroofed, reseated, and refloored, a new heating apparatus has been inserted, and the organ has been rebuilt and improved. The works have cost £1,200.

The Dublin Corporation have this week accepted tenders for the erection of the new vegetable and fish market from plans prepared by the city surveyor, Mr. S. Harty, Pres.M.I.C.E.I. For the buildings themselves, the tender of Messrs. W. Connolly and Son has been accepted at £14,700, and for the new roof and fittings that of Mr. J. Lysaght at £4,360.

The new Technical School at Ossett, Yorks, was opened on Friday by Mr. Swire Smith. A loan exhibition of oil paintings, engravings, and etchings is being held in the building, supplemented by art objects from South Kensington.

At a meeting of the Droitwich town council, held on Wednesday, Mr. Bernard Godfrey was unanimously appointed borough surveyor. Mr. Godfrey is assistant to Mr. Robt. Godfrey, A.M.I.C.E., engineer and surveyor to the King's Norton rural sanitary authority, and also assistant surveyor to the Northfield highway board, and hon. sec. of the Association of Birmingham Students of the Institution of Civil Engineers.

An improvement has been effected at All Saints' Church, Southampton, by the introduction of a new oaken Communion-table, manufactured by Mr. A. Jones, of Kingsfield, from designs by Mr. J. P. St. Aubyn.

Our Office Table.

THE sudden death of Sir Edgar Boehm removes from our midst a Court favourite rather than an "eminent sculptor," as he is styled by the *Times*. In an issue of May 9 of the present year we published an excellent portrait and biography of Sir Edgar Boehm, and need only add that his elevation to the Associateship R.A. in 1878 followed immediately on his production of the model for the admirable statue of Carlyle, now on the Chelsea Embankment. In 1881 he was appointed Sculptor in Ordinary to the Queen, and two years later was advanced to the full rank of Academician. The Jubilee coinage may be accounted the greatest of his failures. His statue of the late Emperor Frederick in St. George's Chapel, Windsor, was unveiled in the presence of the Queen yesterday (Thursday), and he had in hand among other commissions a memorial effigy of Bishop Lightfoot for Durham Cathedral, the clay model of which he had almost completed. Sir Edgar, who was but 56 years of age, will, by command of Her Majesty, be interred in the crypt of St. Paul's Cathedral in a grave beside that of Sir Edwin Landseer to-morrow (Saturday) at noon.

AT the meeting of the R.I.B.A., on Monday evening, a letter from Sir Arthur W. Blomfield was read, stating that the modern nave of St. Saviour's, Southwark, has now been demolished, with the exception of a few fragments which remained of the original nave and aisles. These remains present some puzzling features, and prior to the rebuilding of the church (from Sir A. Blomfield's designs) Mr. Simpson, the clerk of works, will be happy to show them to any architect presenting his card. A visit of the members of the Institute will be arranged at the church one Saturday early in the new year, when it is hoped Sir A. Blomfield and Mr. F. T. Dollman, the author of the well-known monograph on the subject, will meet them and discuss the problem raised by the fragments of the 13th-century church of St. Mary Overie.

AFTER a long inquiry, Mr. G. Pemberton Leach, one of the Assistant-Commissioners of the Board of Agriculture, has concluded the consideration of the scheme for the protection of Mitcham Common and other open spaces in the neighbourhood, known as Upper-green, Lower-green, Figg's Marsh, and Beddington-corner. Under the scheme it is proposed to place the common and the other lands mentioned in the hands of a board of twelve conservators representing Mitcham, Croydon, Beddington, and Wallington. The extent of these open lands covers an area of about 600 acres. The scheme has been strongly opposed by the lords of three manors, who claim the freehold of the soil, and value their rights at £30,000. In the event of the Board sanctioning the scheme, it will be subject to the approval of Parliament before it can become operative.

THE death of Mr. Philip Horsman, of Tettenhall-road, Wolverhampton, took place, after a short illness, on Sunday. The deceased for many years carried on a successful business as a builder and contractor in Darlington-street, Wolverhampton, and during his later years was widely known for his unstinted philanthropy, Wolverhampton having benefited in a marked degree by his generous gifts. His principal benefaction was the Art Gallery in Lichfield-street, which was erected at his sole cost. He also contributed largely to the erection of the Eye Hospital in Compton-road, and gave with open hand to many other charities. The deceased, who was in his 66th year, leaves a widow, but no children.

A HIGHLY-SUCCESSFUL International Exhibition is being held just now by the Edinburgh Photographic Society in the Royal Scottish Academy National Galleries, Edinburgh. The President of the Executive Council is Mr. Hippolyte J. Blanc, architect, who himself is a distinguished exhibitor. The collection is a large one, and the illustrated catalogue is quite the best of its kind that we have seen, giving reproductions of photographs by the various processes now in use. One showing Temple Bar as re-erected at Sir Henry Meux's Park at Theobalds, Cheshunt, is specially interesting, and shows how well Mr. Ponting, F.S.A., of Marlborough, has done the work of "restoration." Mr. Richard Keene, of Derby, shows some of his beautiful photographs of Derbyshire churches, and Mr. Lyd Sawyer some charming studies of river and boating scenes, an odd corner of Newcastle, &c. Mr. Maurice B. Adams exhibits a pen-and-ink drawing of the Quadrangle, Hotel Dieu, Beaune, with a photo-lithographic reproduction of the same. Some Aristotype views from Ludford are shown by Mr. W. R. Spiers, and Mr. Henry W. Reeves contributes some excellent architectural interiors from Harrow and Morden Green of houses. Melrose Abbey, by Mr. R. S. Webster, is a fine print, and Mr. Fred Hollyer sends his delightful impressions of paintings by Mr. Burne Jones, A.R.A. Mr. Ralph W. Robinson shows his Academicians' portraits, and the Autotype Company are large exhibitors. Lectures are being given during the evening. The next, on Tuesday, Dec. 23rd, will be by the President, on "The Architecture of Normandy and Brittany," with slides by the author.

THE Fine Art Exhibition in connection with the Glasgow Institute opens this year two months earlier than usual, the chief object being to set free such pictures as the artists may desire to show in the London spring and summer Exhibitions. The work of members of the Institute forms the staple of the display, a feature being the painting of works by members of the R.S.A. There are 767 oil pictures and water colours, in addition to about sixty architectural drawings and pieces of sculpture. The more prominent exhibitors include A. K. Brown, William Rattray, Morris Henderson, Austen Brown, and James Guthrie. The loan collection, although small, is select.

MEETINGS FOR THE ENSUING WEEK.

FRIDAY (To-night). — Architectural Association. Adjourned Special Business Meeting for consideration of proposed new rules. 7 p.m.

MONDAY.—Society of Arts. "Gaseous Illuminants," Cantor Lecture No. 5, by Professor Vivian B. Lewes. 8 p.m.

TUESDAY.—Royal Scottish Academy Galleries, Edinburgh. "The Architecture of Normandy and Brittany," by Hippolyte J. Blanc, architect. 8 p.m.

CHIPS.

A life-sized oil portrait of Sir Rowland Hill has been presented to the National Portrait Gallery by his son, Mr. Pearson Hill, and accepted by the trustees. It is a half-length by J. A. Vinter.

It is stated that the directors of the Barry Dock Company have, without prejudice, offered Mr. Walker's executors £50,000 in settlement of the executors' claims of £204,000, and that the offer has been declined. The arbitration before Mr. J. Wolfe-Barry, which was to have commenced on the 1st inst., was adjourned until the 16th inst., in the hope that negotiations between the parties would have resulted in an amicable settlement. This has, however, unfortunately, not been the case.

On Saturday the Bishop of Colchester consecrated the new church of St. Margaret's, Partridge-green, West Grinstead.

The Denbighshire coroner held an inquest at Wrexham, on Friday, as to the death of Mr. Fred Davy, who came to that town from Chesterfield early in October last to take the mastership of the Science and Art Schools. He was on Tuesday morning found dead in bed. The jury returned a verdict of "Found dead."

At a meeting of the City side of the Gresham Committee, held on Monday, Mr. Karl Pearson was elected Gresham Lecturer in Geometry, in succession to the Dean of Exeter. Mr. Pearson gained an open scholarship at King's College, Cambridge, in 1875, and was Third Wrangler in 1879. He was subsequently elected Fellow of King's College. He is now Professor of Mechanics and Applied Mathematics in University College, London, and for the past six years has been actively employed in teaching engineering students, principally at that institution. There were twenty candidates for the position.

The Press view of the Guelph (Hanover) Exhibition at the New Gallery will take place on Monday week, the 29th inst., and the private view on the following day.

Mr. Gilbert Thomson, M.A., C.E., who lectures on sanitation in the Technical College, Glasgow, has been appointed to the lectureship on civil engineering in the same college, vacant through the acceptance by Mr. Arthur Thomson of a similar appointment at Poona.

Mr. Arnold Mitchell, A.R.I.B.A., gave a lecture at the London Institution on Monday on "English Architecture of the Middle Ages."

Trade News.

WAGES MOVEMENTS.

THE NORTH WALES SLATE TRADE.—In connection with the North Wales Quarrymen's Union, a special conference was held at Carnarvon on Saturday for the discussion of the hours of working, the rate of wage, and other details appertaining to the industry. The president of the union (Mr. D. G. Williams, Festiniog), in an introductory address, remarked that the quarrymen had allowed themselves to subside into a very low and unsatisfactory condition, but there were now indications of a reaction. Mr. W. H. Williams (Bethesda) read a paper on "The Condition of the Quarrymen and the means for uniting them." Mr. W. J. Williams (the secretary of the union) introduced a discussion upon the operations of the slate trade, declaring that the workmen were entitled to an advance in wages of at least 10 per cent. After a discussion, it was resolved to call the attention of the quarry proprietors to the large discounts allowed off the price-lists, which caused great loss, not only to the proprietors themselves, but also seriously affected the wages of the workmen, and to invite a conference at an early date.—Mr. D. Williams (Festiniog), in a paper on "The Rate of Wages," contended that the quarryman was entitled to a daily remuneration of 5s. A long discussion resulted in the passing of a resolution urging that the wages for skilled quarrymen should be at least upon the scale recommended in the paper. Resolutions were also passed in favour of the appointment of boards of arbitration, and of shorter hours of labour.

Col. Luard, one of the Inspectors of the Local Government Board, held an inquiry at the Town Hall, Stockton, on Friday, with reference to the application of the Corporation to borrow £6,500 for the purpose of reconstructing the baths and washhouses, and £1,000 for the purchase of property for improving the means of ingress and egress from the Borough Hall. The borough engineer submitted plans showing the alterations, and explained the same to the inspector.

Holloway's Pills.—The balsamic nature of Holloway's Pills commends them to the favour of debilitated and nervous constitutions, which they soon resuscitate. They dislodge all obstructions, both in the bowels and elsewhere, and are, on that account, much sought after for promoting regularity of action in young females and delicate persons.

A HUMANE TELEPHONE.

People who suffer from deafness and noises in the head will be glad to hear that an eminent Aural Specialist of London has hit upon a cure which is said to be absolutely efficacious, and may be applied at the patient's home. It is a miniature telephone, which fits inside the ear. It is not only a producer of sound, but also a cure for the distressing noises in the head. Being comfortable to wear, it will no doubt be a boon to mankind. A pamphlet describing its construction is printed, and may be had from the Publisher, 21, Bedford-square, London, W.C. Price 3d.

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TENDERS.

*** Correspondents would in all cases oblige by giving the addresses of the parties tendering—at any rate, of the accepted tender: it adds to the value of the information.

AYLESBURY, BUCKS.—For the erection of a residence on Pickford's Hill, for Mr. T. Field. Mr. H. J. Capell, 7, Abbeville-road North, Clapham Common, S.W., architect:
Ball and Mayne, Aylesbury (accepted) ... £870
(Exclusive of certain works).

CREDITON.—For alterations and additions to the Plymouth Inn, Crediton, for Messrs. Harding, Richards, and Thomas. Mr. C. Cole, Queen-street Chambers, Exeter, architect:—
Brooks, J. T. (accepted).
(Seven tenders received).

EXETER.—For sanitary alterations to the Sawyer's Arms p.h., for Messrs. Ross and Pidsley. Mr. C. Cole, Queen-street Chambers, architect:—
Ham and Pasmore (accepted).

EXETER.—For erection of villa residence in the Polsloe-road. Mr. C. Cole, Queen-street Chambers, architect:—
Reynolds, H. (accepted).
(No competition.)

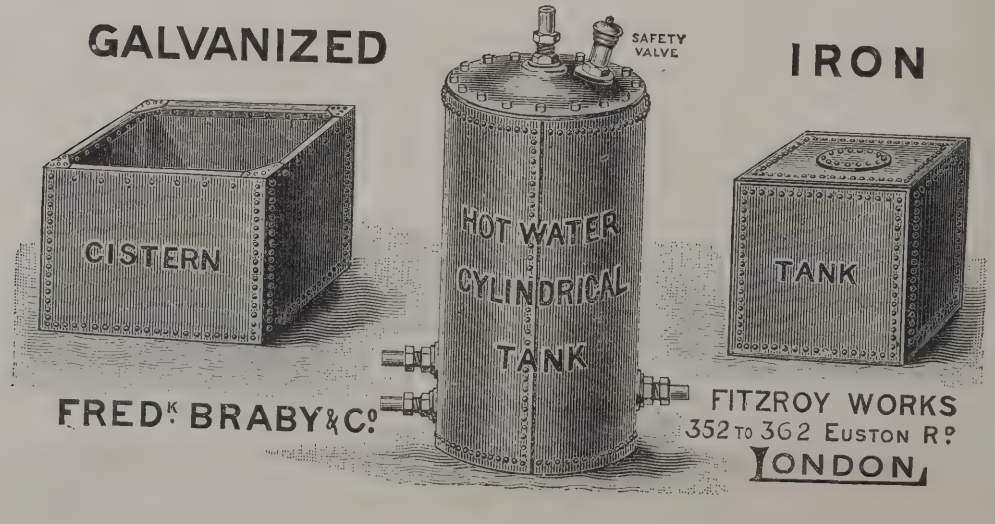
LEEDS.—For two terrace houses, Potternewton. Messrs. Swale and Mitchell, Leeds, architects:—
Brickwork, &c.:—Kirby, R.
Joiner:—Benton, J.
Plumbers:—Stead and Noble.
Plasterer:—Branton, R.
Slater:—Season, J.
Painter:—Butler, J.
All of Leeds.

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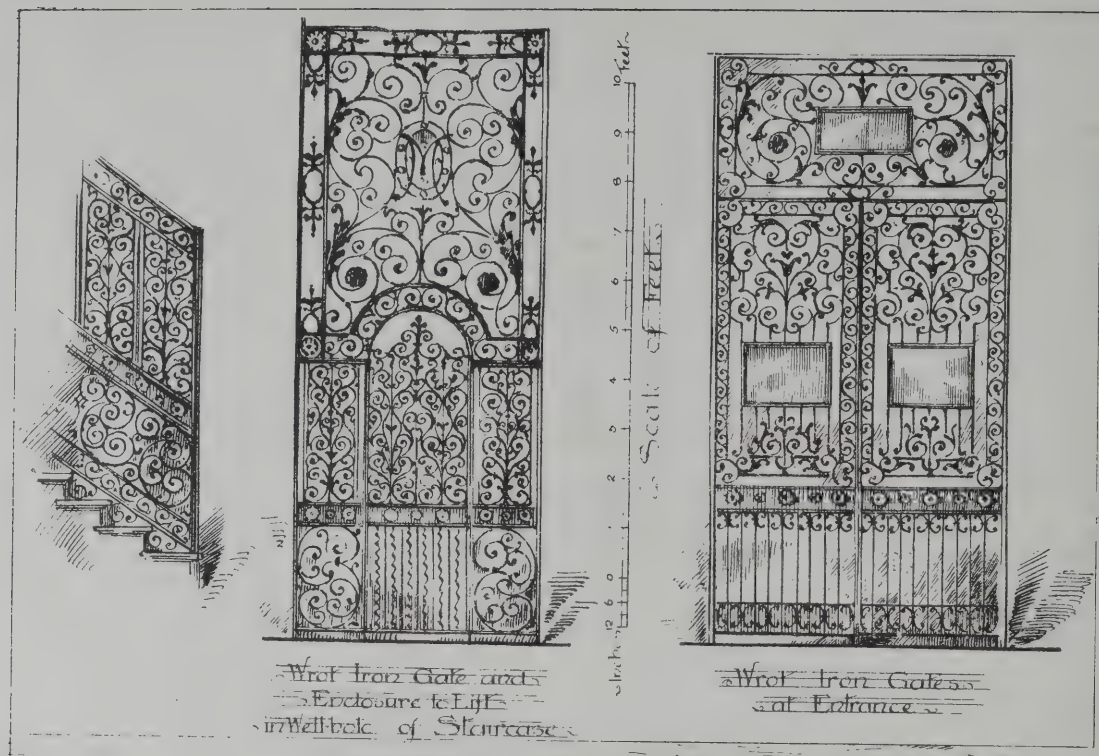
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Wrot Iron Gates at Entrance


GARDEN HOUSE.
THROGMORTON AVENUE E.C. for
MESSRS ASHURST MORRIS CRISP
& Co
Davis & Emanuel Architects 1890

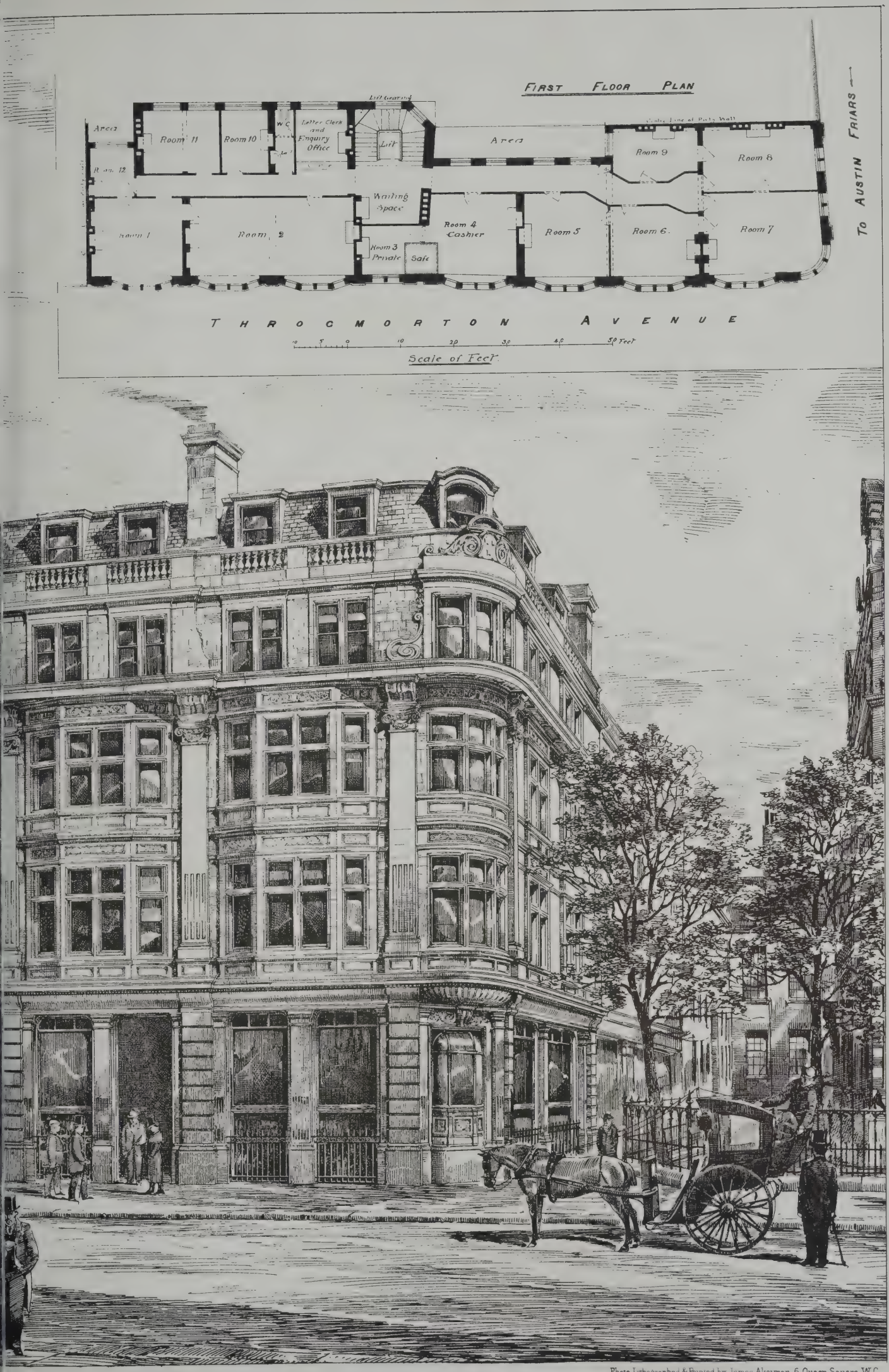
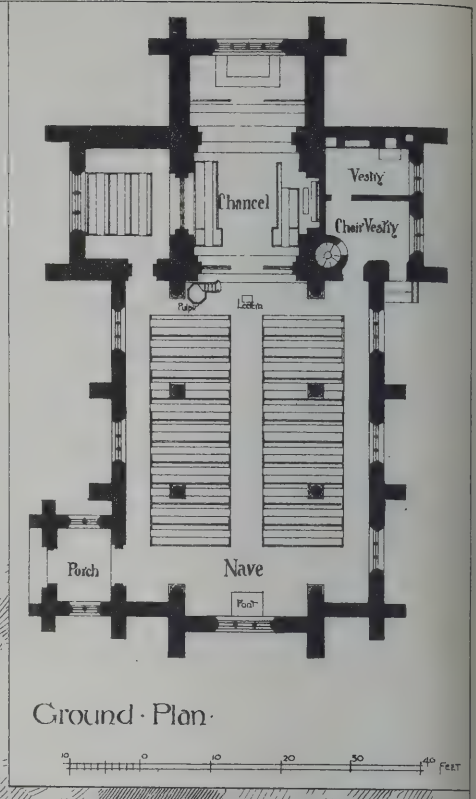


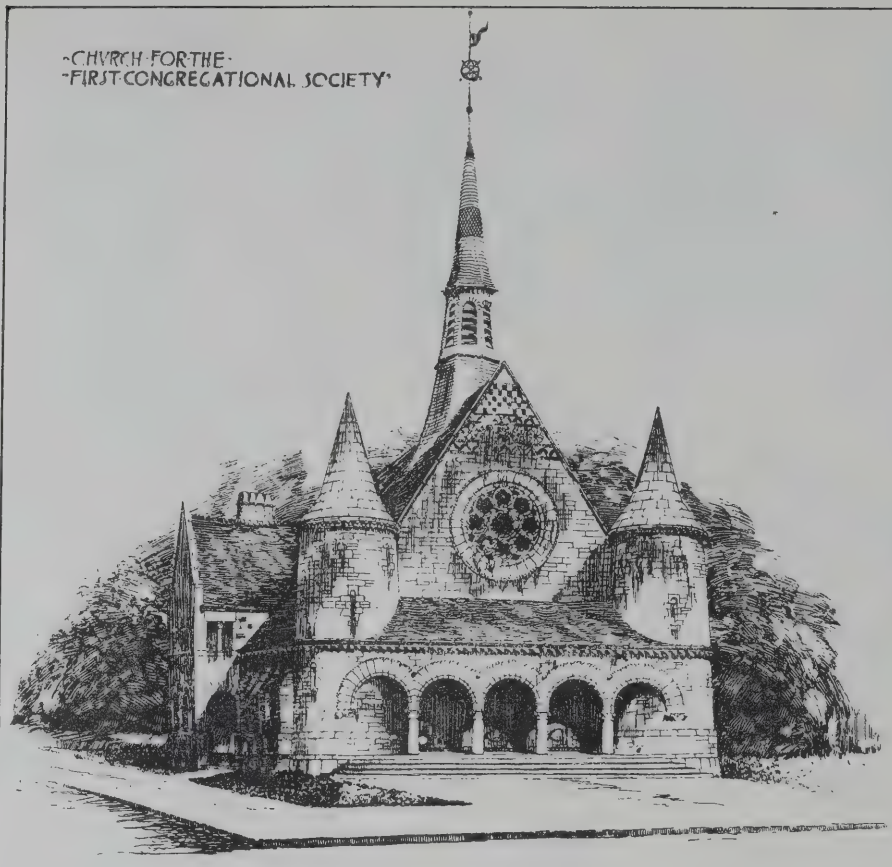
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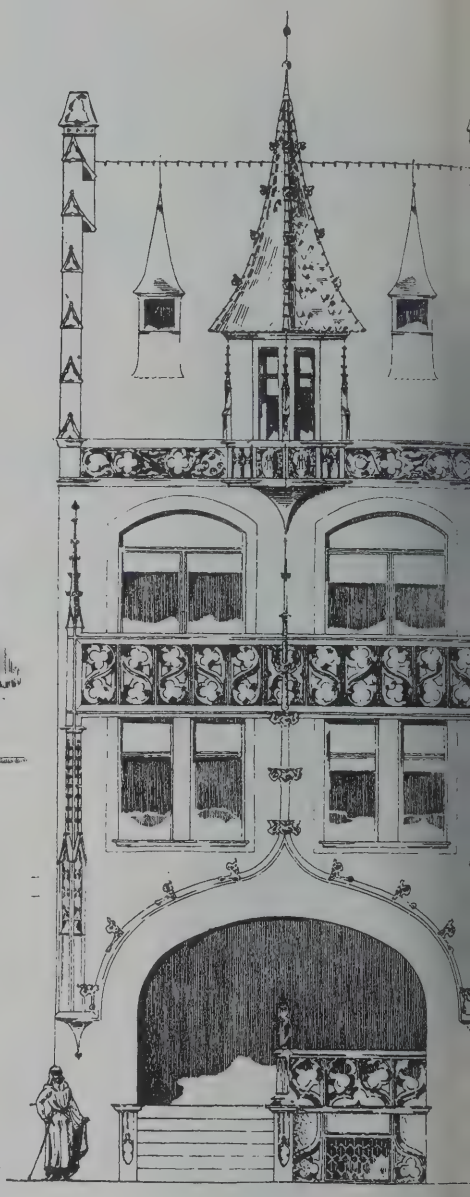
R. W. Knowles Esqre. J.P.
Proposed Memorial Church
Colston Bassett
Arthur W. Brewill Architect



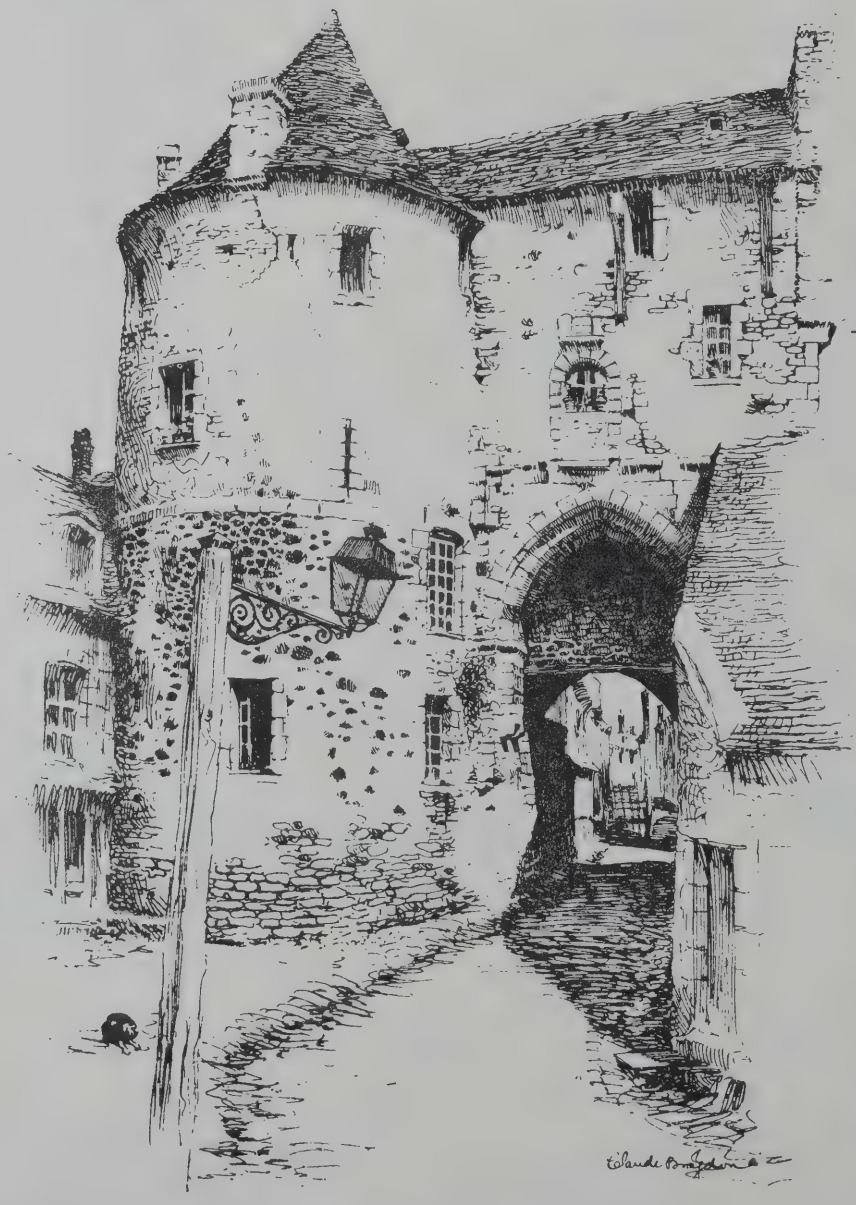
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Wm. Martin Aiken, Archt., Cincinnati.



DESIGN FOR CITY FRONT.
G. W. E. Field, Cincinnati A. C



Sketch by Claude Bragdon, Rochester GATEWAY.



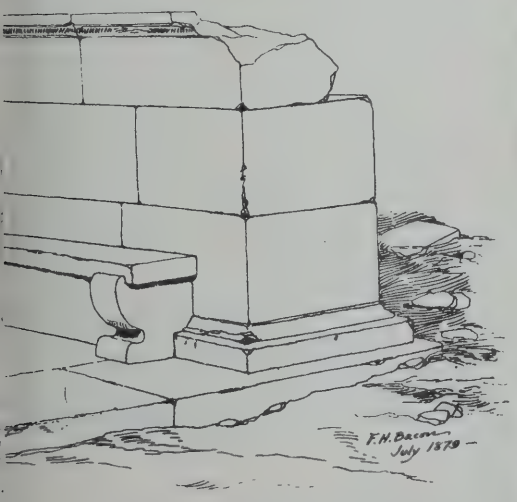
Fountain in a blank wall



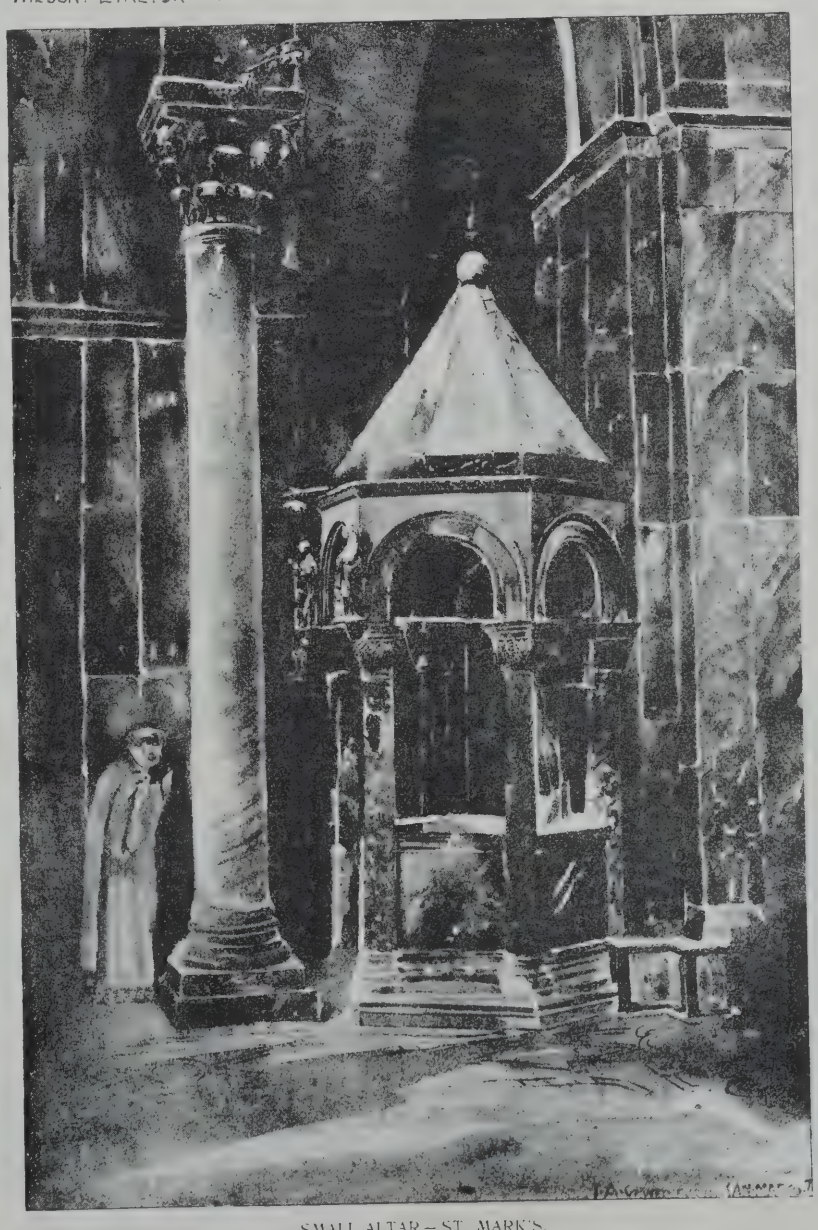
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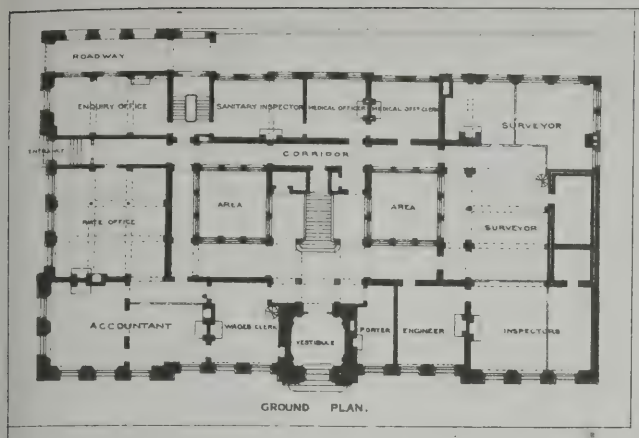


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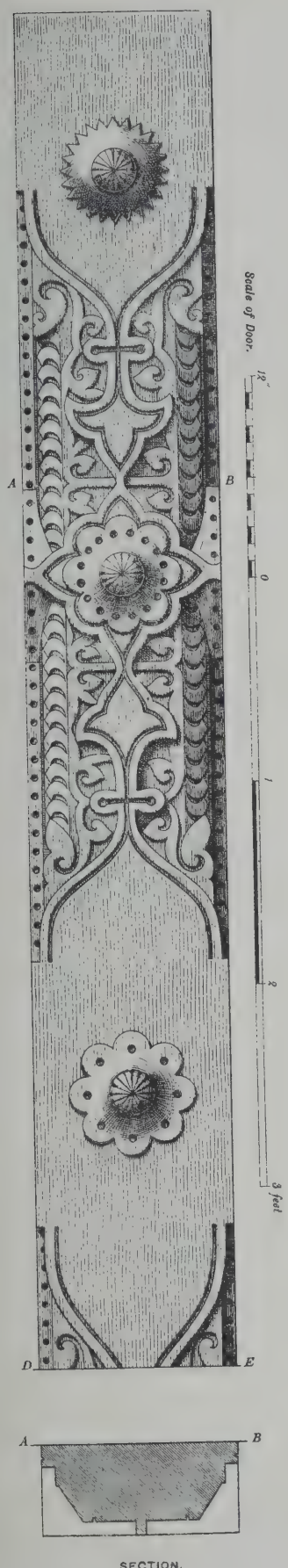
GROUND PLAN.

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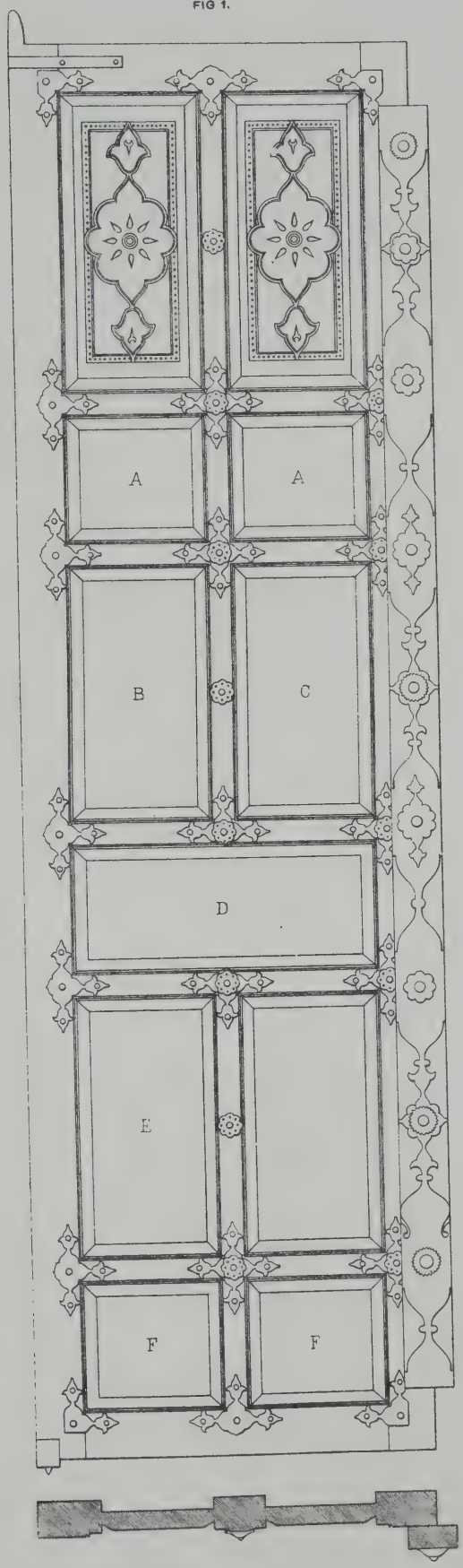
DOOR FROM THE AMBER PALACE JEYPORE.

FIG. 2.



SECTION.

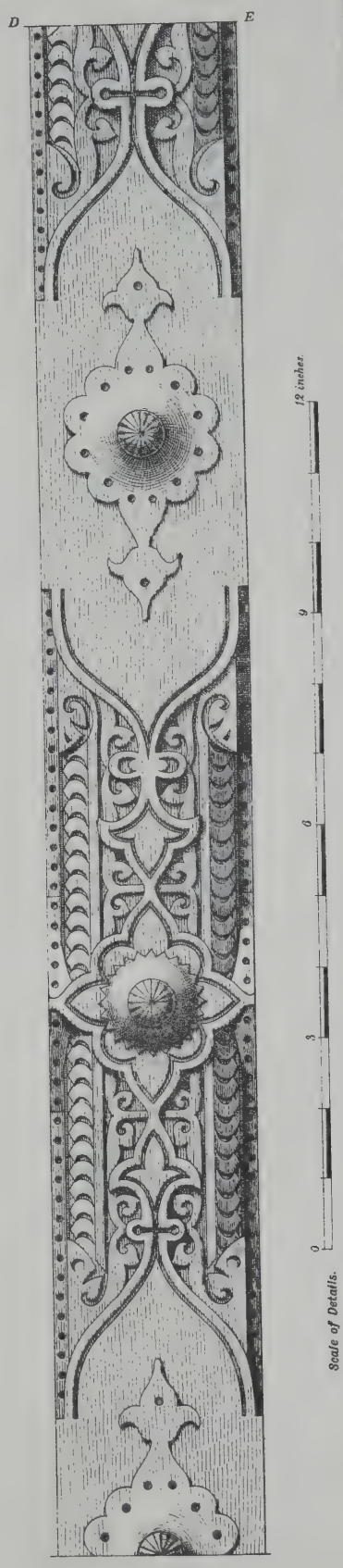
FIG 1.



SECTION.

FIG. 1. LEAF OF DOOR.

FIG. 3.



FIGS. 2 & 3. OVERLAP BAR.

Col. S.S. Jacob. C.I.E. Director.

Bhairav Baksh, Del.t

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HE BUILDING NEWS
AND ENGINEERING JOURNAL.
VOL. LIX.—No. 1877.
FRIDAY, DECEMBER 26, 1890.

ADAPTATIONS OF DESIGN AND STRUCTURE.

SPECIALISM in plan, structure, and fittings is a development of the nineenth century. Less than half a century go buildings were designed upon models or istoric types; we had churches and chapels uilt with very little reference to the reuirements of worship or of congregations; omestic buildings were designed in Italian r Gothic style without comfort internally; ommercial and other buildings were seldom udied with regard to their adaptation, but nerely as displaying some style or predilecon of the architect or owner. Happily this ra of purposeless building and "architecturalism" has passed away, and we ave entered upon what Comte would ave designated the "positive" phase f architectural development. As with eligion, science, and sociology, architecture has gone through two stages since he Renaissance, one in which commonense vernacular architecture entirely disppeared under the mania of Classicism, the ther in which it became abjectly imitative. The first was the Reactive, the second the rchæological stage. We have now entered pon the last, or specialised stage, when rchitecture is beginning to assume a definite haracter as a science. Buildings are no onger erected to represent old types or istoric periods of art; they are the determinate solutions of problems presented to the lesigner. We cannot say that all modern vorks are of this description, but we can onfidently point to such examples as the Manchester Town Hall, the Birmingham Assize Courts, the Leeds, Glasgow, and Greenock Municipal Buildings, the Natural History Museum, the Imperial Institute, the new Admiralty Offices, and other recent buildings to illustrate our proposition. Recent hospitals and unions, our leading Board schools and technical schools equally show a study of plan and design to meet definite requirements. Their authors have made a special study of the best types of arrangement, they have mastered the evidence of Blue-books and Government regulations, and have formulated schemes based on experiments and scientific data. Even church-building has been taken out of the sphere of puritanical narrowness and ignorant churchwardenship; archæological restorationists have not the influence they had a few years ago in trying to make every church conform strictly to a particular period or style; on the contrary, the absolute requirements of ritual, or of liturgical meaning, have evolved a plan adapted to our views of Anglican worship, quite independent of Mediæval tradition on one side, and of post-Reformation meagreness on the other. The same regard for specialisation has influenced the design of churches outside the Establishment. They are no longer bare conventicles of four walls, but are designed with particular reference to the requirements of congregational worship, many of them displaying considerable skill in construction and architectural treatment of the interior. In this class of church we find details of Mediæval and Classical design adapted to a distinctly new type of plan, admitting of new roof construction, domical and other features. We may trace in a similar manner architecture applied to concert halls, theatres, buildings of public assembly, winter gardens, horticultural structures, museums, art galleries and libraries, baths and wash-houses, and a host of buildings erected for commercial and industrial purposes. For each of these kinds of buildings the architect, some years ago, would have been content to grope his way as best he could, by making haphazard guesses, and consulting the tastes of his employers; but now he has more reliable data to work from. He can consult the latest results; types of plan are within his reach for many of these kinds of building. The elementary school is no longer a matter of consulting masters, as dimensions of school and class rooms, modes of grouping, the arrangement of desks, lighting and conveniences have all become matters of regulation, and there is little room for guesswork. So it is with infirmary wards and hospitals, the floor area for each patient, the determining unit of each ward plan, the mode of arranging ward kitchens, nurses' rooms, and conveniences, the method of disposing the administrative offices are no longer subjects of conjecture and doubt, as the medical profession and the requirements of nursing staff have settled the question, so far, at least, as scientific research and observation of experts have gone. The whole plan and design of such a building have, so to speak, become crystallised round a type. Precision, the result of special knowledge in every department, is one of the aims of the architect. We now find the profession striving more than it has ever done to master certain problems, and we cannot point more convincingly to this fact than in the attempt made to "patent" certain arrangements of buildings or combination of principles. The very fact of a claim being made for a system of building on wings having a central public hall, with entrance to each wing through an inquiry office, shows the increased attention given to principles and germs of arrangement. As more determinate plans are evolved for buildings of different sorts, so we can imagine certain principles of combination will assert themselves. The progress of every scientific study is to eliminate error or useless features, and to lead to a few well-defined types—in other words, to "a survival of the fittest."

Specialism is not alone confined to plan. As a certain form or determinate type is given to a structure, so its ornamental features must tend to crystallise round the form, and be suggested by it. The plan develops the feature. Thus an angle spiral stair suggests the turret, and the form the turret takes can be varied by the artistic mind in many ways, but it is possible to exhaust them. Every eminent architect has his own style by which he is known, a proposition that is only another assertion of specialism in design. To extend this argument would be useless, as our readers are aware that the churches of one architect, the municipal buildings of another, or the workhouses and infirmaries of a third—we need not mention names—have a certain style or individuality, and these peculiarities have been derived not altogether from mere imaginary whim, but are incidental to, or derivative of, special study and knowledge. The specialisation of structure opens a much greater field for attention than we can bestow upon it, for it may be said to include every mode of structure and material. We will here mention two of the more important examples, the structure of floors and of roofs. Less than fifty years ago, before the introduction of cast or wrought iron, there were only two sorts of floor—those of timber and stone. We possess now a variety of special modes of construction suitable for every purpose. The requirements against fire have created a large number of ingenious methods or patents in which rolled iron girders and joists have been introduced with brick-arching, concrete, fireclay, overlaid with wood, tiles, or cement. In the proper exercise of his professional skill, the architect is called upon to select that method which affords the greatest efficiency for strength, and resistance against fire. Four or five varieties may be named here. First, those in which wrought-iron joists and wooden flooring are combined with concrete or plaster beneath the iron joists, adapted for ordinary dwellings. Messrs. Barrett and Fox's and Allen's systems are of this class. Second, the girder and arch systems, such as that introduced by Sir W. Fairbairn, in which girders resting on iron columns at intervals support arches of brick resting on lower flanges, the girders being tied together by tension-rods, the wood flooring being laid upon spandrels filled up level with cement concrete, adapted for mills, factories, and warehouses. The Lancashire Mills show this method, in which cast-iron main girders, carrying cross girders of wrought iron, are combined, the latter carrying half-brick arches with spandrels of concrete. Third, iron girders encased by fireclay blocks, or skewbacks supporting arches, or hollow tubes of refractory clay, like the floors introduced by the late Mr. Whichcord at the National Safe Deposit Company's premises, Mr. W. Hornblower at the Liverpool Corn Exchange, and the Doulton-Peto floor. Fourth, the Dennett System, composed of iron girders supporting a specially-prepared concrete arching, which has no tendency to spread, and can be finished with an arched ceiling of considerable fire-resisting power and strength, suitable for warehouse floors. Fifth, other systems of encasement, one in which iron is embedded in concrete in such a manner as to utilise resistance to compression and tension to the utmost, like that of Hyatt; also Moreland's system of immersing braced girders in a concrete slab. Now there is a special value in each of these methods. Where great strength, fire resistanee, and economy of space is required, those plans appear to be the best which encase the lower flanges of the girders, and call into play resistance to compression in the intermediate material between the girders. For architectural purposes and decorative treatments, that method may be desirable which exhibits the lower portions of the girders or allows them to appear below the level of the ceiling. The improved manufacture of iron and steel joists, compound girders, as those of Measures Bros. and Co., Dunkerley and Co., has greatly facilitated the design of floors and ceilings for architectural effect, as great strength and lightness can be combined with a limited depth. Flooring has become quite a special department of building, and it would be impossible to enumerate here all the kinds. But of the more durable materials we have tiles, concrete, patent artificial stones, like the "Granolithic," and internal floors varying from the substantial wood block, like Lowe's, to the ornamental kinds of parquetry, made by several well-known firms of repute. The methods of fixing the blocks or the parquetry are ingenious. We have the blocks secured by metal keys, by "disc keys," by a system of dowelling, tongueing, and grooving, the respective merits of which, as regards durability and cleanliness, the architect has to consider before writing his specification. Then as to ceilings, the necessities of modern architecture has brought in existence a whole host of substitutes for ordinary plastering. The specialisation has been the result of certain wants, such as lightness, economy of labour, fire-resisting, and sanitary purposes. Plain or elaborate and curved work called for distinct materials and treatment. The non-inflammable and light fibrous plaster slabs, like Jackson and Son's, have rendered internal decorations independent of old methods of construction, and made rapid execution possible; asbestos in various forms is coming into use, and the "anaglypta" relief is one of the many new special kinds of decoration.

The many requirements of roofing have developed a few special methods. To cover

large areas with light roofs and vaults that shall exert no thrust on the walls has developed concrete and tubular pottery as a filling in between ribs of iron. Some fire-proof material, like concrete or terracotta, was an essential condition. The last material can now be manipulated like stone, and is brought to a degree of accuracy in the new Doulton manufactures. Asphalte is being largely used for roof coverings, gutterings, and weatherings, in lieu of lead or slate, and a method of applying it in a heated liquid state or as plates has become a special trade. Horticultural glazing has also assumed quite a distinct art. Steel for roof construction is coming into requisition, and it will not be long before light roofs of metal and porous concrete, put together in sections, will be substituted for the more tedious operation of hoisting every rib into place and constructing centring for the vault or dome.

Not less remarkable are the improved and special fittings which every illustrated catalogue affords. Specialisation has been carried to a great extent in matters of furniture, art metalwork, and fittings. Chimneypieces and over-mantels, of designs to "suit all tastes," with grates to match, have naturally provoked artistic minds, though it is the general result of the same tendency. The details of ironmongery, such as door and window openers, and door furniture, illustrate in a remarkable manner the development of ingenuity in the attainment of particular objects. We have fittings specially suited to every kind of window and door, modes of adjustment and regulation for casements under different conditions of fixing, fastenings for every kind of door and window, grates and stoves for various situations. Electric lighting has developed a large and important branch in connection with building, in which special adaptations and fittings are very noticeable, and the same specialising is evinced in the fittings of the sanitary and ventilating engineer. In all these trades of building we see the adaptation of means to ends has been carried to an extent hardly considered possible some years ago, and that both in design and structure there are some definite ideals within our grasp.

PLASTER DECORATION.

ONE or two useful suggestions were made the other day at the Institute by those who contributed papers on the subject of Decorative Plaster-work, reported in our last issue. Of these the principal was the absolute importance of "doing the work of design in the place instead of for the place," a point very properly insisted upon by Mr. Stephen Webb. Practically this advice would leave to the modeller the design of the decorative work of ceilings and friezes, for very few architects have the experience of designing *in situ*, and not many have a very keen sense of scale. Now, this is a principle of architectural design to which we have called attention more than once. Paper-design, as we have called it, has tended to separate the architect from the art craftsman, and has introduced a species of fictitious design into every branch. In no other trade is this more marked than in those of the modeller, the carver, and the decorator. These arts require for their effective production a knowledge of the media or materials worked in, and also an appreciation of scale or proportion. How often do we find admirable detailed designs for cornices and friezes quite spoiled or out of scale with the building when the work has been executed!—stone carvings in panels or bands that are finical in appearance and exceedingly flat—defects attributable mainly to the designs having been made in the drawing office, perhaps a long way from the actual building, or having been copied from designs utterly unsuited both in scale and in motive. Well did Mr. E. S. Prior say that, "Learning to design was not learning to draw designs; paper-work designing was ineffectual; the medium of execution was the only one for conscientious design." Plaster ornamentation as we see it on many recently erected buildings—both municipal and domestic—is a sorry thing. The plasterer is present, and the material is there, but certainly not the artist. Enter any important council chamber or music room in some of the fashionable buildings designed by well-known architects—notice the coarse plaster-work in coves, the heavy swags and trusses and brackets, the proportions of moulded ribs. Projecting members look either too coarse or meagre; these are prevalent features of coved ceilings and vaults. Of materials there are enough, but of design scarcely an indication. Who is to blame? We think the architect is, in giving designs made in his drawing office, partially copied examples of old work without any relation to the situation. He has probably neglected the study of modelling, thinking it the least important of the architect's studies, or he makes the common mistake of treating stucco design as surface ornament that can be applied anywhere. English Domestic architecture of the 16th and 17th centuries affords the student examples of stucco duro or modelling of much beauty and variety, yet very few of the details are accessible or published, and many of the old houses either no longer exist, or are mutilated. Italian, French, and Flemish stucco work have each in turn been exemplified during the period referred to. The delicately manipulated art practised by Raphael and Giovanni, referred to by Mr. G. T. Robinson, is only accessible to those who have visited Italy. The revived art of stucco modelling in this country is less delicate, often bold, and later the French and Flemish styles were introduced in which the ornamentation was sometimes exuberant and heavy. The 18th-century houses of the nobility display many excellent examples of stucco work: these are mainly the work of Italian modellers, who have kept the secret of their craft to themselves. Architectural students would do well to follow the steps of a few of the leading architects of this period, and become modellers, for the art is one of the greatest importance to anyone who desires to become a master of stucco work or any kind of external ornamentation. We know, in fact, that plaster-work in the 18th century was a recognised and remunerative vocation, and many artists, craftsmen, and architects followed the calling of stuccoist. Thus the father of the late Mr. John B. Papworth, architect, was a famous plasterer and stuccoist, employing some hundreds of hands, and was apprenticed to Rose, a leading craftsman in London, in the middle of the last century. Rose was a pupil of two celebrated fret-workers, who erected the plaster-work of St. Martin's-in-the-Fields early in the century, and other notable buildings. As the plasterer to H.M. Board of Works, Papworth had excellent opportunities, and brought the art of stucco embellishment to a high degree of perfection. The influence of Sir William Chambers aided the artist in stucco. When the 18th century Italian stuccoists appeared, there was a mixed style in vogue, often vigorous, as we see in many of the houses of the Jacobean period. The heavy panelled work and stucco ornament on ceilings of the Stuart period are known to every student of the period. It was left to the Italian workers to introduce a lighter and more elegant style in which foliage and other ornament were worked by hand, and with particular reference to distance and situation, light and shadow. But at the commencement of the present century casting in plaster was introduced, and the modelling of stucco by hand was superseded. In every case mechanical methods of reproduction have crushed o individual hand skill. The cast work l naturally to heavy, coarse decoration, a as a matter of course, to excessive repr duction and repeats of ornament.

It is for architects once more to encoura modelling. All that is required is for t office to assume more of the character of t studio. Modelling, we know, is taught connection with the Art classes of t Department; but it is confined to the pr duction of isolated studies of panels, relie and designed ornament, without relation actual buildings. There is little that practical in the course given to studer in the schools of art. The profession m do something by promoting a special cl of modelling in the department by bringi their designs into the school, and by instru ing modellers as to the requirements buildings, and as to the effect of orname in relief *in situ*. The great obstacle to t development of the art of the stucco work is the isolation of those who have to do t work—the architect and the modeller. T one is content to design something in his offi without the slightest idea of the proportio and degree of relief necessary for a ceili panel or a cove; the other is only an expe in the material, but has no interest in stud ing the effect of his work in its place. Wh architect and plaster-workers are broug together, and the one devotes his time a lit to modelling and the other to architectur design, we shall see an improvement in t art of modelling in plasterwork—we sha see fewer sprawling ornaments in ceiling less of that distasteful repetition of moul ings or repeats. Modelling can only done in the workshop or on the scaffol It is ridiculous to imagine that a desi on the flat, however clever as a work mere surface ornament, can give t result or decorative value which a schem worked out by hand in clay or plaster c do. The quantity and distribution of stuc ornament in a frieze or a ceiling panel ca not be arrived at by a pencil-line drawi on paper, simply because the lines do n express the forms, and when seen in particular light the plaster-work, as com pleted in compliance with the drawing, loo overcrowded or exceedingly coarse. To a successful design, the material must itself manipulated; next to this, we shou say all plaster or stucco ornament ought be drawn full size *in situ* as cartoons, a brush-work as drawing from the roun certainly not line work—is the only mode which the effect of the design can be obtain approximately.

TWO LARGE RAILWAY BRIDGES I INDIA.

AT the last two meetings of the Institution Civil Engineers papers on the new Lan downe and Chittravati Bridges have been re and discussed. The Lansdowne Bridge over t Indus at Sukkur, was described by Mr. F. Robertson, M.Inst.C.E. At Sukkur, where t North Western State Railway had been carri across the Indus, the river passed through isolated ridge of nummulitic limestone, and w divided into two channels. The Sukkur Pass w bridged by three spans of 278ft., 238ft., a 94½ft. respectively, while the Rori Channel w crossed in a single span of 820ft. The ste superstructure of the last-named span w designed by Sir A. M. Rendel, K.C.I.E., a consisted of a pair of cantilevers, each having projection of 310ft., carrying between them central girder 20ft. in length. Each cantilev had a vertical height of 170ft. above the abu ment, and at this point the principal membe consisted of a vertical pillar and an inclin strut or jib, united at the top by a horizont tie, and tied back by an inclined land-tie backstay anchored into the rock. When t anchorage had been bedded, the inclined guy a the vertical pillar were erected by means of tem porary staging, and were permanently connect at the top. The inclined strut, which was 230 in length, was then built up from the abutmen



ng laid in its inclined position on staging at lower end, and further supported, as it pro-ssed, by temporary wire ropes from the tical pillar. For the erection of the permanent rizontal tie between the tops of the pillar and strut, a temporary wire-rope suspension dge was thrown across the space of 123ft. ween their summits. This bridge carried a ntry, on which ran the travellers employed in cting the steel-work of the horizontal tie. The ntilevers on each side of the river having thus en pushed forward with an over-reach of 123ft., system of running overhead rope-gear was ted up, spanning the intervening gap and rving for the erection of the remaining mem-rs of each cantilever piece by piece. The ropes re worked from the summit of each cantilever winches, which were driven by a steam-gine on land by means of a running rope. hen the cantilevers had thus been carried out their full length, the central girder was erected on a temporary inverted bowstring, which was ung across the opening by the overhead gear.

The New Chittravati Bridge, on the Madras ailway, was the subject of a paper by Mr. d. W. Stoney, M.Inst.C.E. The main line of e Madras Railway was originally carried across e Chittravati River upon a plate-girder bridge, nsisting of 40 spans of 70ft. each. This bridge as opened for traffic in 1868, and was partially stroyed by a great flood in October, 1874, when ne of the piers were undermined and over-rown. It was afterwards repaired, and the maged piers having been replaced by screw-les, the structure had served for some years to rry the traffic, but was now replaced by the idge which formed the subject of this paper. he new bridge had a total length of 2,680ft., nsisting of 19 spans of 140ft. from centre to ntre of the piers. It crossed the river along-de the old bridge, but more nearly at right ngles to the stream, the approaches being formed y a railway diversion 1¾ miles in length. The urce of the river was 80 miles above the bridge, id in that distance it drained an area of 2,400 quare miles. In the flood of 1874 its velocity was calculated to have been 8½ft. per second, and the discharge 114,625 cubic feet per second. As a rule, the bed of the river was practically dry for nine months in the year, and taking advantage of this fact, the dry bed of the stream was made use of for the transport of materials, for the erection of the iron-work, and for the operations connected with the sinking of the pier cylinders and the well-foundations of the abutments. The foundations were carried down to the solid rock at a depth varying from 18ft. to 80ft. below the present bed, the overlying strata consisting of sand, gravel, and clay, and in some places of a deep bed of large trap boulders. The cylinders were sunk by various processes, according to the nature of the ground, the greater part of the work being done by dredging, while some cylinders were partly excavated in the dry with the aid of pulsometer pumps, and in others the work was carried on by divers or by pneumatic apparatus. The superstructure was designed for a single line, the girders being of the Murphy-Whipple type. The iron-work of each span was erected, during the dry season, upon camber-blocks laid upon the dry bed of the river, and was lifted into place by 60-ton hydraulic jacks applied under the end pillars of each girder. The weight of each span was 146 tons 12 cwt.

HOREHAM CHURCH, SUSSEX.

THIS small church, with accommodation for 100 worshippers, has recently been erected on the Horeham Hurst Estate. The walls are constructed with red bricks, the roofs covered with dark tiles, and the bell-cot with oak shingles, the timber-work to gable-end, porch and doors being of oak. Internally the walls are finished to a height of 4ft. 6in. in cement, and rendered in plaster above. The roof is ceiled with deal match-boarding, stained and varnished. The sashes are glazed with light tints of cathedral glass, the east window being stained glass. The flooring is formed with Duffy's solid wood blocks, and the building heated by means of Grundy's patent hot-air system. The works, which include the seating, oak pulpit, and reading desk, have been carried out by Mr. Daniel Ashdown, builder, Horeham-road, Sussex, under the superintendence of the architect, Mr. H. Percy Monckton, F.R.I.B.A., of 32, Walbrook, E.C.

THE ARCHITECTURAL ASSOCIATION.

THE REVISION OF RULES.

AN adjourned business meeting of the Association was held on Friday evening to further consider the report of the special committee on the revision of the rules. Mr. Leonard Stokes, the president, occupied the chair. Our subjoined detailed report of the discussion and that of last week show that, as we anticipated in our article of the 5th inst., p. 778, the report as presented by the committee, has so far been confirmed in the main, the numerous alterations being emendations of an explanatory or verbal character, and not changes in principle. A feature of the meeting was the small minorities by which amendments which seemed to be out of harmony with the spirit of the meeting were supported by vote. Eight, seven, and even four and three hands only were raised for propositions to which larger numbers had spoken in the discussion. At times the President had no little difficulty in maintaining the rules of debate, three or four members, each propounding a distinct amendment, endeavouring to speak at the same time. Turning now to our notes of the proceedings, we may remind our readers that at the previous meeting held on the 12th inst. (see p. 847 in our issue of last week), the whole of the first class of rules, to be known as the Constitution, were adopted, with the exception of No. 3, the consideration of which was postponed until the arrangements with allied societies had been considered in detail under the By-laws. In opening the adjourned proceedings on Friday, Mr. Hugh Stannus, chairman of the Rules Revision Committee, moved that a new rule be added to the Constitution, fixing the

subscription of existing members at half a guinea, in order to render it less easy in future years, when "old members" will be in a minority, for younger men to snatch a division, levelling up subscriptions to the guinea. The feeling of the meeting seemed, however, to be against the proposal, and on the suggestion of Messrs. Owen Fleming and W. H. J. Leverton, its consideration was adjourned.

Passing on then to the proposed code of By-Laws, 39 in number, Mr. Stannus moved the adoption of No. 1, defining the objects and methods of working of the Association. Mr. W. H. Atkin Berry demurred to the introduction in the draft of a "studio," as one of these, believing that the establishment of such a form of organisation by the Association was not only unnecessary, but inexpedient. The very best studio a youth could enter was, he held, an architect's office. The President and Mr. T. E. Pryce pointed out that the Association would not be bound forthwith to provide a studio if the rule was adopted as it stood, while Mr. Cole A. Adams supported the rule on the opposite standpoint, that the members having already adopted a report of the education committee, recommending, among other changes, the establishment of a studio, the Rules Committee were bound in loyalty to consider it as an instruction for their guidance. Mr. F. R. Farrow supported the rule as it stood, and after further remarks by Messrs. W. Burrell and C. H. Brodie (who was informed by the President that the *A. A. Notes* was "an" organ of the Association), the rule was adopted unaltered, *nem. con.* By-law 2, placing the arrangements for all methods of working under the control of the committee, gave rise to considerable discussion, led off by Mr. Leverton, who moved an amendment delegating certain independent powers to each class-committee. This was seconded by Mr. C. M. Hudson and supported by Mr. Brodie, while the rule was spoken to by Messrs. Stannus, F. L. J. Barrow, Burrell, and others. Eventually, on the suggestion of Mr. Cole Adams, Mr. Leverton's motion was amended to the insertion of the word "sub-committees," as among the bodies to be appointed by the committee, and in that form it was carried. By-law 3, relating to Class-reports, was the subject of much criticism, and after a discussion in which Messrs. Cresswell, Brodie, Arthur E. Earle, F. T. W. Goldsmith, C. A. Adams, Pryce, Farrow, and others took part, Mr. Stannus withdrew the proposed rule, and recast it as follows:—"Each class shall present a monthly report and an annual report and balance-sheet at the end of June in each year to the committee." This was seconded by Mr. Earle, and carried without a dissentient. By-law 4, stipulating the mode of election of members, was adopted, with verbal alterations suggested by Messrs. Adams, Atkin Berry, and F. T. Baggallay, and spoken to by Messrs. E. S. Gale, H. Sirr, and others. The next four rules, relating to allied societies, were adopted *nem. con.*, and then the consideration of No. 3 in the Constitution was resumed, and the rule passed without alteration. The fight of the evening took place on by-law 9, which raised the question of the entrance fee and subscriptions, and read as follows: "The entrance fee of each member shall be two guineas, and his annual subscription one guinea; but members elected prior to the first day of January, 1891, shall pay an annual subscription of half a guinea." This was proposed by Mr. Stannus and seconded by Mr. C. A. Adams. Mr. Fleming thought the increased charges would press heavily on country members, and proposed, as an amendment, that all members residing beyond a radius of twenty-five miles from Charing Cross should pay an entrance-fee of one guinea, and a subscription of half-a-guinea, both as at present. The by-law, when regarded in the light of the history of the movement, was, he said, an extraordinary one. The education committee, after inquiry, came to the conclusion that the best step would be to raise the subscription uniformly to one guinea; but on account of the opposition with which this was met, the rules committee now proposed that the increased charge be only enforced on all future members. He believed its working would have an extremely injurious effect in checking the entrance of new members and the establishment of two rates of subscriptions. It was also unfair, as throwing the whole additional burden of the increased expenditure on the youngest students, and injudicious, inasmuch as it would deprive the Association of any *locus standi* in appealing to the R.I.B.A. for pecuniary help in working out their scheme. The plea that had been urged, that the seniors would leave *en masse* if the subscriptions were raised, was very selfish, and one that everyone should be as ashamed to use with regard to a body from which he had in the past derived benefit in his studies as he would be with regard to any religious or philanthropic body. He believed it would be practicable to raise the extra sum required out of students' fees perhaps, supplemented from without; but he would deal with the question of provincial members, and move his amendment. Mr. Walter Millard seconded the amendment, characterising the committee's proposal as shabby in the extreme, and a "newspaper shuffle," expressions which were greeted with cries of "Withdraw," and appeals to the chair. Mr. C. A. Adams, in defending the rule, said since he was defeated a few years ago by a narrow majority on a proposal to raise the subscriptions of existing members, he had learned to regard that proposal as a mistake, as it would undoubtedly lead to a large secession of senior members. The Association would in the future offer advantages and privileges which the present members had not enjoyed, and as these could not be obtained without expenditure, it was necessary, unless the improvements were to be abandoned, to make increased charges. As to the entrance-fee and first subscription or two, they were paid not by the pupil, but by his parents or guardians. It was undesirable to make entrance to the profession too cheap. He urged the members to support the by-law heartily and unanimously, as it afforded the best solution of the difficulty. Some confusion ensued, as Mr. Earle was permitted to move another amendment retaining the half-guinea subscription while raising the entrance-fee; and Mr. Bernard Dicksee a third, under which the subscription was to be 25s. including a copy of the A.A. Sketchbook. An urgent appeal on the point of order to the President by Messrs. Goldsmith, Adams, and others, resulted, however, in a ruling that the amendments must be taken and disposed of seriatim. Mr. Fleming's amendment was spoken to by Messrs. Brodie, Hudson, and Atkin Berry, the last-named speaker arguing that it would be unfair and selfish of existing members, who had derived great educational benefits from the Association, to shelve all the cost of the new scheme upon those who had not yet joined. On being put to the vote, Mr. Fleming's amendment was lost by a very large majority, only eleven holding up their hands in its favour. The result was received by the meeting with loud applause. Mr. Earle then moved a further amendment that the subscription of members residing not less than thirty miles from Charing Cross be half a guinea, leaving the two guineas entrance-fee as at present. This was seconded by Mr. A. H. Clark, and supported by Mr. Cresswell. Messrs. Hampden W. Pratt and E. W. Mountford opposed, on the grounds of the difficulty that would arise in defining whether a man was a town or country member, and after observations by Messrs. Goldsmith, Hudson, C. A. Adams, and others, the amendment was defeated, only three voting in its favour. Mr. Dicksee then moved a further amendment that the subscription of all members be 25s., including a copy of the "A.A. Sketchbook." He expressed his regret that the Sketchbook was not more widely supported, and argued that, assuming they had 1,150 members, the change would bring in an additional £266 10s. annually, allowing for the cost of the extra copies. Mr. Earle seconded the amendment. The President deprecated its adoption, pointing out that to charge members for a book they did not voluntarily subscribe for would be to cheapen the publication without commensurate benefit to the Association's funds. The amendment was lost, as was a fourth one moved by Mr. Arnold S. Taylor and seconded by Mr. Burrell, under which it was proposed to retain an entrance fee of one guinea, and after an hour and twenty minutes' discussion, the rule as proposed was carried as a substantive motion amid loud applause. The President announced that the committee would, subject to the approval of the meeting, treat as "old members" liable to the present subcription those candidates already nominated on the 12th inst., whose elections would come on at the first meeting next year, and this was unanimously agreed to. Rule 12 dealing with members whose subscriptions are in arrears, was, at the suggestion of Mr. Cresswell, amended by the insertion of a clause providing that a tender of resignation "shall not absolve a member from paying arrears then due." No. 13, as amended at the suggestion of Messrs. Baggallay, Brodie, and Goldsmith, provides that a list of members whose subscriptions are "one session" in arrears shall be posted. To by-law 15, giving the constitution of the committee, Mr. Leverton proposed to add the clause: "No member of the committee shall hold any paid office," and this was seconded by Mr. Hudson. Mr. Stannus said that frequently lectureships went a-begging, and this would preclude any member of the committee who volunteered to fill a vacancy from accepting an honorarium for expenses. He himself only received for his course of lectures three guineas, which did not cover the cost of the diagrams. Mr. Cole Adams and the President supported Mr. Stannus, and the amendment was rejected by a very large majority, the rule being agreed to with a verbal alteration. By-laws 16 to 20 having been agreed to, the adjournment of the meeting was moved at a quarter past ten by Messrs. Baggallay and Stannus, and agreed to, the President promising that as soon as a date could be fixed for the next meeting, it should be announced to all members. Nineteen by-laws remain for consideration: but the only business about which a strong difference of opinion may be anticipated is No. 36, dealing with votes, in which it will probably be sought to substitute papers sent by post for a show of hands in open meeting, a change made indeed by the new rule No. 12, added a fortnight since to the Constitution.

"BUILDING NEWS" DESIGNING CLUB.

A SMALL SCHOOL OF ART.

[WITH LITHOGRAPHIC ILLUSTRATIONS.]

THE new session of our Designing Club has commenced with a very large number of members, and it is evident from the great many designs sent in for the first subject that the work of the club is quite as popular as ever. To insure success we depend upon the industry of our contributors, and without their co-operation it is evident that the high standard of excellence obtained by previous members of the Designing Club cannot be maintained. Looking round among architects now in good practice, we can number a few who in years gone by were constant contributors to the competitions which we conducted, and it has from time to time been a satisfaction to receive letters from some of them saying how much practical knowledge they obtained while working out the subjects which were set for solution in this way. Such success is the best inducement to further efforts, and we begin our task once more with a renewed determination to render our enterprise of mutual advance as far as possible worthy of the record which has distinguished the work of our Designing Club in the past. These were the particulars supplied to competitors for subject A:—

"*A Small School of Art for a Village*, comprising at least four class-rooms or studios, one to be suited for life studies, and to have a small dressing-room for model attached. A master's room to be provided, and a small office. Studios 15ft. high. Site in a village street on frontage line to measure 75ft. in width and 30ft. deep; no entrance from rear. Front of site faces north. Style left to competitor. Scale, 8ft. to the inch. Sufficient elevations and plans to illustrate design, with small perspective sketch."

We have carefully examined all the plans sent in, and award the first place to "Spider," the second place to "G in a Horseshoe," and the third place to "Multum in Parvo." This choice has not been easily made, however, and we are quite aware of the merits of some of the other designs, as well as the faults of the selected ones. That the result will please everyone is not expected, and it is certain that all the designs leave much room for improvement.

"Spider" acknowledges the need of large windows in a school of art, and makes his façade design accordingly. The entrance is wanting in dignity, and the iron gates are too trivial in detail, and not high enough to prevent boys climbing over, which they would be sure to do in a village street. The turret in the centre is too squat, and not very attractive. Taking the area occupied by the hall, entrance lobby, and porch, it will be noted that the area devoted to the hall is cramped, and wanting in dignity. This is a

fault, and we do not like the way in which the staircase is reached round the corner. It is well lighted, however, and the office commands the entry fairly well; the master's room, too, is handy for receiving visitors. The conveniences are located well one over the other, though the ladies' accommodation could be improved by shifting the w.c.'s, and placing the washbasins in the cloak-room. The model's throne is too much of a stage. An octagonal revolving dais is the best arrangement, made to run on wheels; it can then be readily shifted and adapted to the size of the class, and light available for any given study or pose. The model's room is good, and the modelling room, with an adjoining place for the sinks and clay, is a thoughtful provision very necessary in a school of art. We illustrate the design to-day from the sheet as sent in by "Spider."

"G in Horseshoe," the second design, is also herewith reproduced among our lithographic plates. It is hardly so successful architecturally, and the plan does not occupy the whole of the site. Half-timber work, perched up as it is here under a somewhat "pimping" roof, looks very much out of place, and has the effect of being stuck on as here used. In old work there would have been more repose, and more sailing over for shadows' sake, and to accord with timber construction. The entrance-archway is hardly a success, while its flat top is positively ugly as here managed. The hall is more commodious than in "Spider's" plan, and the staircase is better, giving a roomy landing. The conveniences right and left are good, but rather too small, giving no room for cloaks and hats.

"Multum in Parvo" is to be commended for his endeavour to be simple, though he has hardly marked his building as a school of art. It might be an ordinary elementary school, or possibly a set of stables, looked at from the street. The smaller studios are too small, and the ladies' retiring-rooms are in too public a position, and the men's would be better more out of the way. All the accommodation is obtained on one floor.

To exactly classify the following designs is hardly possible if we are to give precise prominence to their relative points of merit, seeing that they so closely compete with each other. "M.P." has nearly done a good thing, and we like his elevation generally speaking, though the pent along at the first floor level is meaningless, and the entrance-arched treatment is excessively poor. The three oriels above are pretty, and the frieze is suggestive. The brick mullions to the ground-floor windows in so exposed a position and so low down would be cut about soon enough, and are not to be recommended. The hall is needlessly large; the staircase is very good, but the long landing is ugly. The model room should be reached without coming into the life-class studio. "Walmer" shows a care for detail which deserves praise, though his perspective is poorly drawn. Let him note that tall, vertical, narrow windows ranging along by the side of a low squat portal are features which do not harmonise with each other, and the contrast is too marked to be effective. "Walmer's" upstair windows agree with neither, and the steep central gable does not set off the sprawling ones on either side. The plan is better and the studios are well considered. "Red Lion" makes his class-rooms a little too square, and at a depth of 25ft. the light would be hardly enough to draw by, with windows on one side of the rooms only. The administrative part of the building, though very compressed, is cleverly contrived, giving, at same time, a spacious hall and a nice room for the model. "Red Lion" has no knowledge of decorative forms, and till he has acquired some better appreciation of good foliage, it would be best for him to avoid showing any details of this kind. His frieze sketches spoil a practical-looking section. He need not draw with a rotten corkscrew line when delineating perspectives. Such tricks are not really artistic. "Black Prince" ought to do better than his maiden attempt would seem to indicate. Why a tower and spire should be introduced into a school of art is a riddle for Christmas. The conservatory-like lean-to's are ugly, though we admit their introduction has been due to the intention of being practical. The great objection is the studios are the wrong way on, and are lighted from the end, all of them, instead of from the side. Too much room is wasted in the hall, and a "picture-gallery" has to account for the wasteful landing. The master's room in the tower without a fire-place is not good, even for a "Black Prince." "McGinty" sends in a very pretty design; but it looks too much like a roadside parsonage. No one would take the building for a school of art. The skylight on the elevation is the only indication, and this is too much for "McGinty," as he leaves it out in his perspective, for fear of spoiling the effect. This is wrong; but the details of the top light are worse when you come to look at them—nearly all hips and valleys, besides being run on beyond the vertical line of the wall which divides the studio from the rest of the building. Windows on both sides of a studio give cross-shadows, and are a mistake. The hall, staircase, and landing are well planned. "Syphax" adopts half-timber work, and like the second design, does not occupy all the site. He has many merits in his treatment, and the entrance is better than "G in Horseshoe," but his lavatory and w.c. accommodation are exceedingly bad. "Etudiant" has some good taste, but is a little old-fashioned. His entrance doorway is very pretty, the entrance hall is very wasteful, the studios are lighted from both ends, and the life-room from the south side. This is a bad plan. "Merlin" studies American modern work, and designs accordingly. He thus obtains a freshness, but unless he had written "School of Art" along his front, we should not in the least have recognised the purpose of the building. By far too much room is occupied in the plan with hall and staircase, and as a consequence the studios or class-rooms are very small. The arcade above the parapet is meaningless, and, without being pretty, is expensive. We shall expect better things of "Merlin" than this. "Rustic" sends an amply lighted practical-looking building, but his plan is not perfect by any means. His perspective is excessively poor. The upper studios are furnished with skylights. The staircase is very wasteful, but the façade would have looked well if it had not been over-fenestrated. "F. E. B." makes his class-rooms too square, and his cloak-rooms, &c., too small. His elevation has some good windows in it of suitable character; but the doorway is absolutely poor and ill-proportioned. There is no perspective sketch. "Spectre" adopts a Classic dress and draws an elevation in perspective very nicely though scrappily. His plan with all four studios on the ground-floor is crowded and out of the question. Another time we shall expect better work than this from "Spectre." "Philomath," too, is one of our most promising members with an eye for ingenuity of plan and taste in design. He must be practical and realise how his buildings would work out in execution. Take one of his points. Facing the entrance-door are three openings close up together. In the central one rises the staircase, to the left the ladies' lavatory, and to the right the gentlemen's, both in the most public position possible. The office is too wasteful, but the hall is good and the studios are roomy, with a special scheme for lighting those on the ground-floor. "Try," another able contributor, has hit off a characteristic design which well befits a school of art, so far as the exterior is concerned, and with better detail would have given us rather a good thing. The figure panels, the medallions, and the frieze suggest a building devoted to art culture. There is much ingenuity, too, in the plan, but the author has tried to do too much on one floor, and the lighting of the bigger studios at one end is an objection already remarked upon. The cloak-rooms are too prominently placed and are much too small. "Cathetus" sends a design made too much like a house, but having good architectural detail marked by taste and study. The plan is wasteful. "Granite City," contrived on one floor, is too restricted, the studios, with the exception of one, becoming merely small rooms about 16ft. by 14ft. The T-shaped passage is ugly enough, and the elevation would do better for a parish schoolhouse. Everything nearly in "Brook's" design is sacrificed for an octagonal hall in the centre, carried up like a tower, without any practical gain, while the studios are reduced in a needless way till they are too small for real work. The elementary room, for example, if we devoted to it the largest studio, would be only 21ft. by 12ft., and the walls nearly all windows, door, or fireplace. The author has evidently done his best, but must try again, and aim at being less original. "Albyn" draws in a restless way, and designs with an endeavour of being picturesque, breaking up his elevation into a variety of parts to the loss of all breadth and harmony. He is not a bad planner; but this specimen shows want of attention to minor points—thus we find the ladies' and gentlemen's conveniences very much in evidence. Do not black in the windows so heavily, "Albyn," another time. "Horseshoe" draws two sheets, one in brown, the other in black. We see no advantage in this. By not occupying the whole length of the site, this contributor obtains light at both ends; but he lessens thereby the size of his classrooms. Though the building is wanting in "go," it has some fair points, which bear evidence of a love for good work. The elevation is better than the perspective. "Hope" has a plan in general idea somewhat like "Try's," already named, with a corridor the whole length of the site at the rear, with the males' closets at one end of it, and the women's conveniences at the other—the doors facing—a shocking arrangement. "Flint" comes next, with a crude plan and over-windowed façade. "Marmion" draws very carefully; but his design only provides very small studios. "Lotus" gives a conical-capped embattled tower to his façade, and wastes his ground floor on the administrative department. "Stanley" ought to rise in the work of the club. His elevation is much better than his crudely-disposed plan. "Renaissance," if he is the old member who adopted this motto, has improved greatly. His present design is too much like a dwelling, and the plan is occupied too much with small parts below and too cramped above. "Black Diamond" a trifle commonplace, but neat. See corridor remarked upon in "Try's" plan, and ditto to you. "Flute" has some clever parts in his plan, as in the staircase, but the corresponding faults outweigh them. "Tauder" sends a pretty elevation, which is quite spoiled by the sketch view. The plan is on the right lines, if not all that we could wish. Go on, "Tauder," and we shall hope to see you doing better. "St. Gothard" is Dutch-like in style, wanting in dignity. Nothing was gained by not occupying the whole of the site. "Smilash" has endeavoured to strike out a new line for himself, and in a way is original with success. He only gives three good class-rooms, and the lavatories are very bad. "Zummerzet" plans with refinement and care, but his rooms are too small. The elevation is pleasing. "The Bogie Man" sends a design more like a school for the School Board, for which the façade would be well adapted. "Office Jacket" has delineated with the utmost care a by no means unworthy design, but the plan is not equal to the occasion. We like the elevation, apart from its immediate purpose, exceedingly. "Ariel's" design would do for a residence; "Dono's" looks like a club; "Spes" has a good elevation and poor plan; "Dutchman," the last of the second class, sends a design looking suitable for a church institute. The other designs are by "Macbeth," "Art Rambler," "Grafton," "Jope," "Oak," "Minerva," "Snowball," "Sine Nomine," "Ancient Lights," "Venice," "Até," "Sol," "Spider and Fly," "I. C. Y.," "Juno," "No Cards," "Aires," "Æneas," "Jos," "Bootles," "Sam Veller," "Waverley," "Forward," "Beulah," "Koko," "Exonia," "Palæozoic," "Night Light," "Cyclist," "17 Winters," "Camera," "Organist," "Higs," "Nelson," "Castle in a shield," "Over all a bend vert," "Y. H. S.," "North," "Avancez," "Tally-ho," "Cleopatra," "Orm," "Bladud," "Obbiks," "Light," "Practical," "Quoin," "Herbert," "Gerwy," "Devil's Chimney," "St. Edmund," "Old Michael," "Hopeful," "Regina," and "B."

CONSTRUCTIONAL DETAILS OF THE PARIS EXHIBITION.—XXII.

By Banister Fletcher, Jun., A.R.I.B.A.

THE ESPLANADE DES INVALIDES.

FROM a constructional point of view the esplanade is not so interesting to the architect as the Champ de Mars.

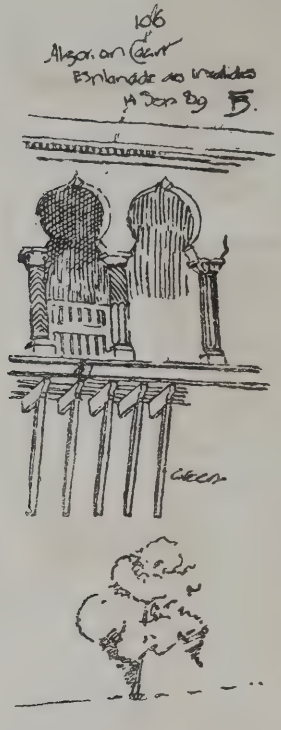
The buildings generally, with some few exceptions, are devoted to French Colonies, and are representative of the architecture indigenous to these colonies; in that respect they are successfully interesting, giving one a faithful imitation of the architecture of the countries, which in the great majority of cases are only seen on paper by architects.

The Algerian Palace, Tunisian Palace, Colonial Palace, Annam and Tonkin Pavilion, and Indo-

China Pavilion are the principal buildings on the east side, and are of this description.

They are constructed in pan-de-bois, and their walls are, as a rule, about 25 centimètres, or 10in. thick.

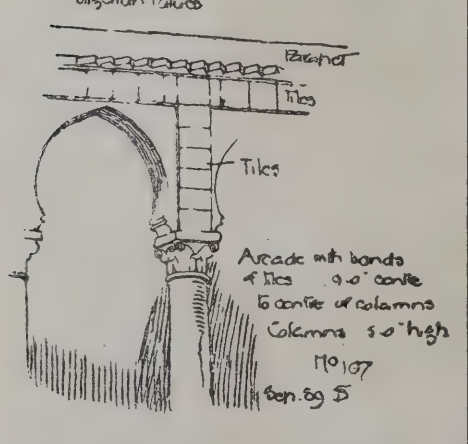
On the west side of the esplanade is the Health



Exhibition in its relation to houses, &c. The Social Economy Exhibition, the Pavilion of the Ministry of War, the "Postes et Telegraphes," are the more important. The construction of the latter is in some respects novel, and will be explained, especially the roof to the "Postes et Telegraphes" pavilion, by M. Boussard.

THE ALGERIAN PAVILION (NO. 105),

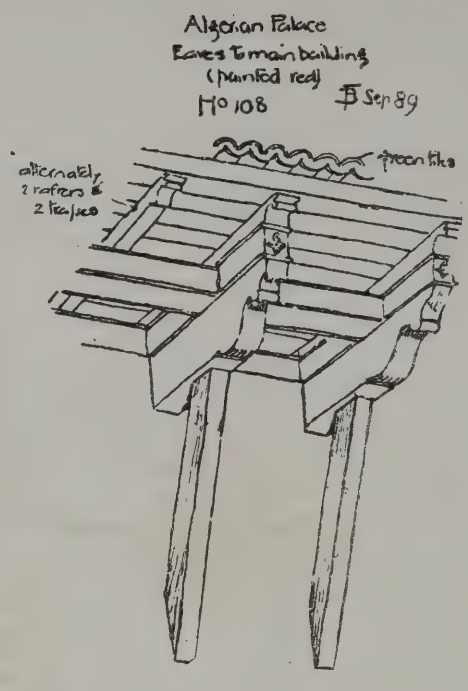
Of which M. Albert Baller is the architect, is situated at the northern end of the esplanade, and reproduces "bits" from Algerian architecture. The principal façade facing the Quai d'Orsay for example, is a reproduction of the "Kouba of



Sidi-abder-Rhaman" as far as its entrance, vestibule, and overhanging roof are concerned (see drawing). The large horseshoe-arched entrance at side, ornamented with faïence, reproduces the Mihrab de la Mosquée de la Pêcherie.

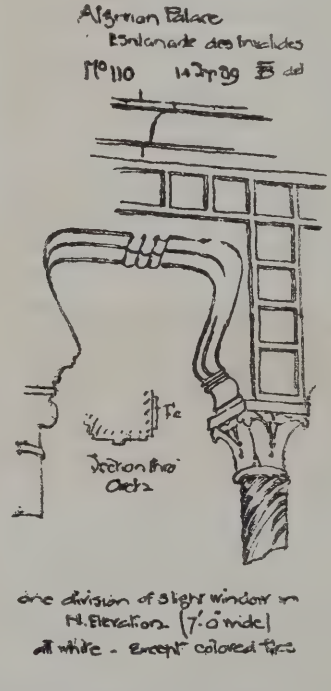
The plan consists of a large central building, divided into three, for the exhibits of the three principal towns of Algeria, separated by columns, and with top light, a gallery running all round this. The horseshoe-arched entrance leads into a square hall with dome over, in stalactite vaulting. On the side nearest the esplanade is an arcaded one-story building, used as a bazaar (shown to the right of the drawing), which is separated from the main buiding by an open arcade.

On the east side of the entrance is a tower containing a staircase. Above the ground story



it consists of three arcades, one above the other, with three openings on each face, and each story being separated by tile bands. The doors to the entrance are noticeable, the panels being entirely formed in octagons. The horseshoe arch is everywhere abundant.

In contradistinction to the exterior, which



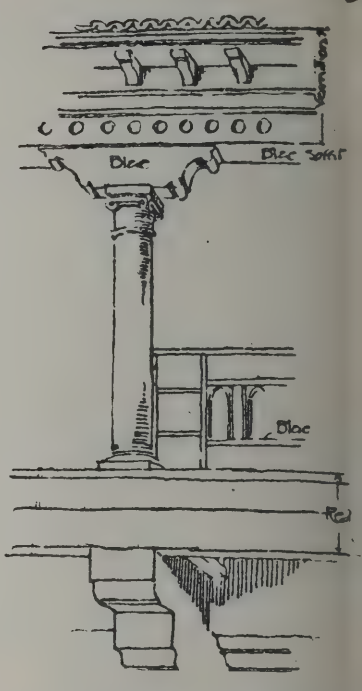
relies for its colour on the wooden balconies and supports, and tile band, to the tower, &c., the interior is extremely rich in colour. The angle dome of the N.E. corner is an example: it is circular, and lighted from the top at the springing of the dome (see drawing) by four semi-circular windows. The dome is carried on four arches, and a corbel starts from each corner of the inclosure space to form pendentives; over the warm brown, as a groundwork, are placed geometrical patterns in gold and dark red.

The palace externally is painted a stone colour.

The balconies to the first floor are supported as in the sketch by wooden props—a feature of Algerian architecture.

At the right-hand corner of the perspective will be seen an effective little circular dome in green glazed tiles, with the crescent over in gold.

A rough "note" of the type of colonnading



employed to join the bazaar to the main building, and showing the method of introducing colour by aid of tiles, is given (No. 107).

The overhanging eaves are all richly moulded and painted vermilion red, which contrasts strongly with the stone-coloured plaster of the building itself.

Blue-coloured tiles are made use of in the various parts of the building for decorative effect, and also faïence and sculptured work by M. Marquette, an Algerian architect.

The overhanging balcony in the front façade, a detail of which is given above (No. 107), practically in wood, coloured, is also thoroughly wooden in construction, and is coloured as indicated. The rough note of the groups of window lights, one of which is given below, is also characteristic (No. 110).

CHIPS.

A tea-party and concert, under the auspices of the General Union of Carpenters and Joiners, Liverpool district, took place on Friday evening in the Oddfellows' Hall, St. Anne-street, Liverpool. After tea, there was presented to Mr. William Matkin, the secretary, an enlarged photographic portrait of himself, coloured in oil, and mounted in a gilt frame, together with an illuminated address.

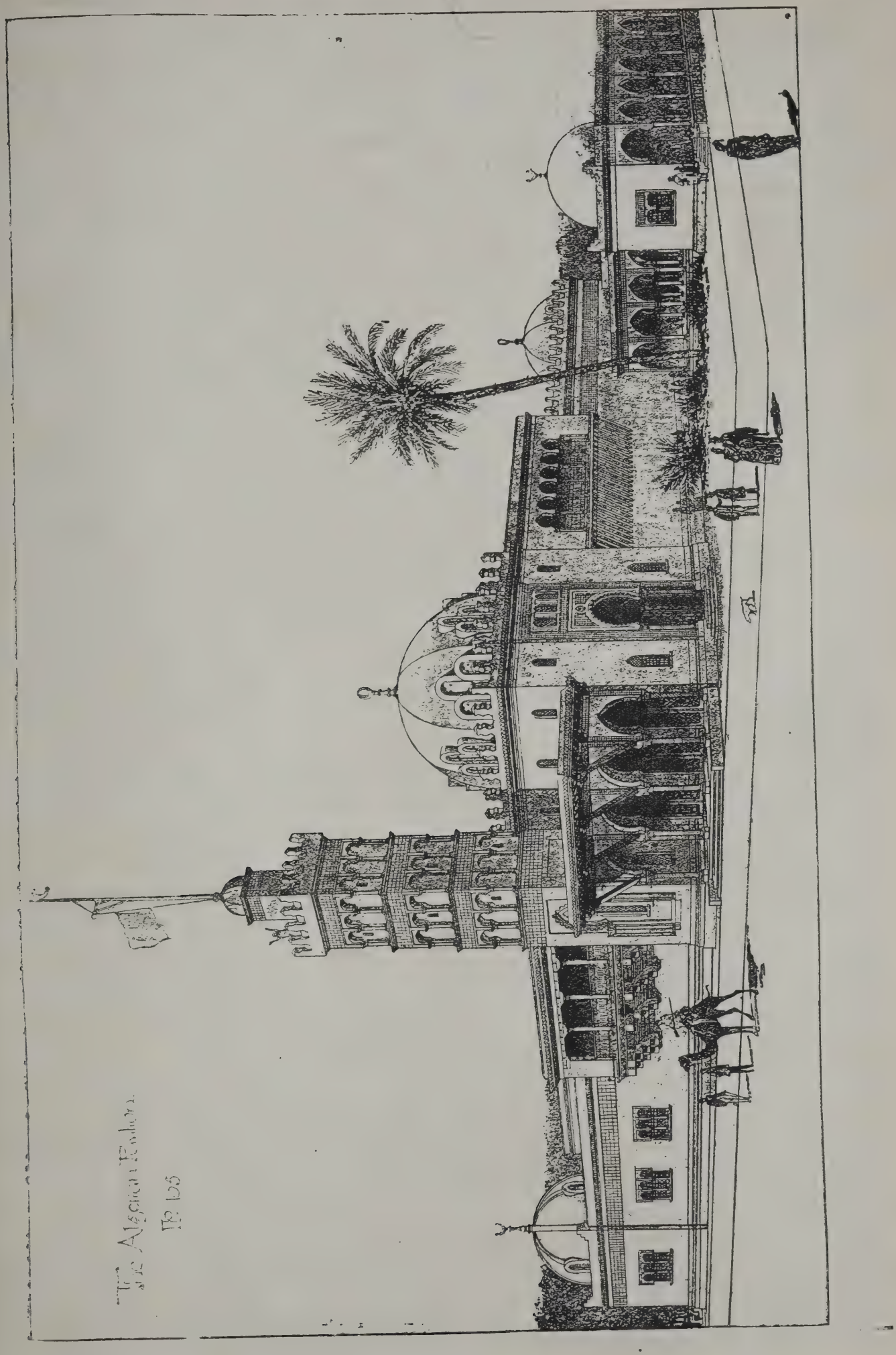
The Hove school board have instructed Mr. Simpson, of Brighton, to prepare plans and designs for new schools in Holland-road to accommodate 750 children.

At a parish meeting held at Sleaford last week to receive the report of the organ committee, it was decided to place a new organ in the chancel, and plans prepared by Messrs. Forster and Andrews for an instrument to cost about £270 were adopted.

M. Louis Eugène Lami, the distinguished painter in oils and water-colours, died on Friday, at the advanced age of 91. M. Lami, who made his *début* as an exhibitor at the Salon of 1824, painted a portrait of Oliver Cromwell, and also numerous historical pictures, notably "Mary Queen of Scots Finding the Body of Douglas" and "Charles I. Receiving a Rose while going to Prison."

About 4,500 Roman copper coins of the later Imperial period have been found a few feet under the surface of a ploughed field at Hahnheim, near Oppenheim, between Mayence and Worms.

The time for depositing in the Private Bill Office of the House of Commons, copies of all private Bills that will be proceeded with during the present Session expired on Saturday. The total number that has been deposited is 197, which is only four more than the number lodged in 1887, when fewer Bills were deposited than had been known for many years. Compared with last session the decrease is 47. Of the total number deposited 159 relate to England and Wales, 33 to Scotland, and five to Ireland.



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ILLUSTRATIONS.

CHURCH OF THE ENGLISH MARTYRS, PRESTON. — ALL SAINTS' MEMORIAL CONVALESCENT HOSPITAL FOR CHILDREN, EASTBOURNE. — "BUILDING NEWS" CLUB DESIGNS FOR A VILLAGE ART SCHOOL. — FALKLAND PARK, SOUTH NORWOOD. — "CHESFIELD," HAMPTON WICK. — HOUSES AT TUNBRIDGE WELLS. — HOREHAM CHURCH, SUSSEX.—A CURIO CABINET EXHIBITED AT THE PARIS EXHIBITION.—CHEMIN DE FER METROPOLITAIN, PARIS.—PROPOSED NATIONAL MORTUARY CHAPEL, WESTMINSTER.

Our Illustrations.

CHURCH OF THE ENGLISH MARTYRS, PRESTON.

This church was designed by the late Edward Welby Pugin in 1866. It is in the Early Decorated style, and accommodated 800 people. In 1887 the present rector, Dean Pyke, found it necessary to increase the accommodation, and Messrs. Pugin were consulted on the subject, and gave it as their opinion that they could enlarge the church without affecting the proportions of the old building, as the original church was very lofty. The additions to the church consist of two bays to the nave and aisles, transept and transept chapels, chancel and side chapels, two large sacristies, committee-room, and corridor, which runs round the apse and down the whole north side of the church, communicating with the presbytery. These additions give increased accommodation for 500 persons. The church is now 150ft. long and 102ft. across the transept. The chancel arch, from which is suspended a massive rood, is 50ft. high, and the height from floor to ridge of roof is 70ft. The roof is ceiled inside at the height of 60ft. The walls are built of brick, faced with Longridge stone; all the internal masonry is also of Longridge stone. The magnificent high altar is a very striking feature in the church. Everything is completed as shown in the illustration, with the exception of the tower, the first stage of which will form the baptistery, and attached to this will be the baptistery chapel, divided from the church by arches filled in with a stone screen. The contract for the additions was carried out by Messrs. W. Hothersall, of Preston, from the designs of Messrs. Pugin and Pugin, of Westminster.

ALL SAINTS' MEMORIAL CONVALESCENT HOSPITAL FOR CHILDREN, EASTBOURNE.

The above building, which is now being erected to the memory of the late Mother and Foundress of the All Saints' Sisters, and the foundation-stone of which was laid by her Royal Highness the Duchess of Albany on July 19th last year, is of red brick with blue bands, and red roof tiling, with some stonework to give relief. It will afford accommodation for about 130 beds. The passages and rooms will be warmed at the same temperature, and every convenience to facilitate labour and save expense has been adopted throughout the building. The vitiated air will be extracted by a foul-air trunk running right through the roofs, with flues into same from every room, and terminating in the kitchen flue, which, being in daily use, practically makes the extracting power automatic. Very ample and cheery day-rooms with low windows, that the patients may enjoy the lovely view, are provided on two floors. There are covered playgrounds for wet weather, lifts for patients and goods, bedrooms adjoining day-rooms for cripples, and conveniences of all kinds to render the working of the hospital as efficient as possible. The cost of the whole will be about £10,500. The works are being carried out by Messrs. Longley and Co., of Crawley, Sussex, under the supervision of Mr. A. Mardon Mowbray, F.R.I.B.A., architect, Oxford.

"BUILDING NEWS" DESIGNING CLUB: A SMALL SCHOOL OF ART.

(See description on page 884.)

FALKLAND PARK, SOUTH NORWOOD.

This mansion is now in course of erection on a fine site overlooking the Surrey Hills and an extensive range of country. In an old house on the estate lived the late Admiral Lord Falkland, whose descendant, the twelfth Lord Falkland, sold it to the present owner, Mr. Thomas McMeekin, for whom the new house is being built. The materials used in the elevations are Portland stone and white bricks. The marble mosaic paving is by Messrs. Mainzer and Kempthorne. Messrs. George Jackson and Son, of Rathbone-place, have supplied the carton pierre ornaments. The building will be wired throughout with the electric light. The architect is Mr. H. A. Rawlins, A.R.I.B.A., F.S.I., of 46, Queen Victoria-street, E.C.; Messrs. Patman and Fotheringham, of Theobald's-road, are the contractors; and Mr. Cook has been employed throughout as clerk of works.

"CHESFIELD," HAMPTON WICK.

This house was built at Hampton Wick, near Kingston-on-Thames, for Mr. H. E. Tatham. The walls are of Fareham bricks, and the roofs of red Broseley tiles. Mr. T. Boyce, of Hart-street, Bloomsbury, was the builder, and Mr. J. G. Finch Noyes, F.R.I.B.A., of No. 42, Half-Moon-street, W., the architect.

HOUSES AT TUNBRIDGE WELLS.

These houses have, we believe, been recently erected; but no particulars have reached us in reply to our usual application for information.

CURIO CABINET.

The illustration bearing this title, and the design of which is by M. Barbedienne, was exhibited at the Paris Exhibition of 1889. The drawing is made from a photo.-tint which recently appeared in *La Construction Moderne*.

CHEMIN DE FER METROPOLITAIN, PARIS.—METHODS OF SUBWAY CONSTRUCTION.

These four diagram sections are particularly interesting, showing the means proposed to be employed for constructing the subways near the road-surface in Paris without interfering with the vehicular traffic of the streets. It will be seen that movable platforms on wheels are located above the cuttings, and run on rails, for the purpose of shifting as the work proceeds. This will be done in sections. Fig. 1 shows the first stage, Fig. 2 the second, Fig. 3 the completed arch, and Fig. 4 the finished subway, with the method of removal of the earth and reconstruction of the invert. The proposed scheme of an underground railway for Paris is the combined undertaking of the Société Eiffel and of the Compagnie du Chemin de Fer du Nord. It will encircle the heart of the city, and the system will commence at the Place de la République, round by the Opera House and the Madeleine, and then skirting the north bank of the Seine past the Concorde, Palais Royal, and so on, right away to St. Bercy and Gare de Lyon. There will be branches connecting this inner circle with the various main railways. Some of the sections are so near the surface as to have iron girders supporting the roads. A long detailed account is given of the project in the December number of the *Nouvelles Annales de la Construction*, to which journal we are indebted for the illustrations given to-day. The four cuts will almost entirely explain themselves.

The report of Messrs. Bruton and Williams, architects, of Cardiff, has been adopted for the restoration of Lisworney Church, near Cowbridge.

LONDON DORMERS.

A short experience of the duties of a district surveyor, writes Mr. Edward J. Tarver, F.S.A., the recently appointed district surveyor for South St. Pancras, is sufficient to show that a little consideration given to the preparation of designs in conformity with the Building Act may exert great influence upon the appearance of our streets. Perhaps others may be induced to contribute hints on the subject. Meanwhile, I venture to begin at the top, and to point out how dormers may be planned either to make or mar the architectural effect of London streets. Dormers may be placed so near to the line of the face of an external wall as to sacrifice their right to wooden window frames, the moulded beauties of which may therefore have to be abandoned. This seems a pity, because, when we can get a good view of a well-designed dormer—where streets are not too straight or narrow, nor houses too high—it is an architectural feature not to be despised. There is, however, a far more important fate depending upon the position of dormers with respect to party-walls. If placed within 4ft. thereof, and so repeated in several houses, a street may have the appearance of being penned in between houses more lofty and dismal than is really the case, for up must go the party-walls 12in. higher and wider than such dormers, in order to prevent the fire demon from striding from one to the other along the line of contiguous houses. It seems to be such a very simple bit of planning to group the dormers nearer the centre of each house, that it is strange that some architects would rather build up the party-walls vertically than let them follow the slope of the roof, and yet the cost of these increased gaunt party-walls would pay for picturesque cornices seen in playful perspective around the dormer heads, if they were only kept at a respectful distance from both external and party-walls.

Luckily we live under a County Council professionally advised by an architect who appreciates the picturesque in our streets.

During the last four months numerous consents have been given by the County Council to projecting architectural features in this district. This may help to repress the dismal views of those hopeless critics who are for ever bewailing the impossibility of the art of architecture being a thing of the present, and who only cherish its memory as that of a relic of the past.

CHIPS.

On Saturday morning a serious fire occurred on the premises of Messrs. Lauder and Co., West Hartlepool. The seat of the fire was the store-yard for creosote timber, which is divided from the extensive sawmills by Mainsford-terrace. Here about 25,000 creosoted sleepers and a large number of telegraph poles were stored all ready for delivery. The property destroyed was worth £4,000.

A public inquiry was held at Drighlington in the West Riding last week by Colonel J. C. Hasted, R.E., one of the inspectors of the Local Government Board, with reference to an application by the Drighlington local board for sanction to borrow £1,150 for providing public offices.

A public inquiry was held on Tuesday week at Newcastle-under-Lyme by Mr. T. Codrington, C.E., and Mr. Bird, inspectors for the Local Government Board, the corporation having applied for sanction to borrow a sum not exceeding £20,000 for gasworks extension purposes, for paying off loans, &c.

A new pastoral staff, the gift of an anonymous donor, was presented to Bishop Lloyd, of Bangor, and was used for the first time on Friday at his enthronement.

Hurts Hall, Saxmundham, the seat of Mr. W. B. Long, which was burnt down a year ago, will shortly be rebuilt in accordance with the plans of Mr. T. W. Cotman, of Ipswich. The contract has been taken by Messrs. Grimwood, of Sudbury, whose tender was only £1 under Mr. Runnacles', of Halstead.

A special meeting of the Rugby local board was held on Wednesday week, for the purpose of appointing a surveyor in the place of Mr. W. Stewart, deceased. There were 140 applications for the post, and of these six had been asked to attend the board. They were Mr. Frank Bagshaw, of Harrogate; Mr. John H. Brierley, of Reading; Mr. Thomas W. Franks, West Bromwich; Mr. George Green, Nottingham; Mr. Geo. W. Hawley, Beeston; and Mr. Hugh Nettleton, Leeds. Mr. Brierley was elected. He was for some time in the borough surveyor's office at Halifax, and has been assistant surveyor of Reading for the last five years.

ARCHITECTURAL & ARCHÆOLOGICAL SOCIETIES.

Architectural Society of Glasgow.—At a meeting of the Architectural Section of the Philosophical Society of Glasgow, held on Monday week, Mr. James Thomson, president, in the chair, the secretary of the society, Mr. A. Lindsay Miller, read a paper on "Architecture." His purpose, he said, was to present illustrations of the architecture of different countries, without attempting to make any particular analysis of the qualities, good or bad, of any particular period, but having in view the object of attempting to trace the changes that had occurred in architecture since the earliest days, and noticing the causes of some of these changes. By means of the lime-light he presented illustrations of the buildings of Greece, Egypt, and Rome, pointing out the changes which had occurred in architecture, resulting largely from the nature and differences in climate and other influences; and also noticing the changes that had resulted from the adoption of Christianity in Rome under Constantine, and the architecture of Byzantium, Spain, the introduction of Romanesque, its development into Gothic, and illustrating by views the changes of Continental Gothic, and particularly the changes in Gothic in England and Scotland from the Norman to the Tudor.—At the monthly meeting, held on Thursday, the 18th inst., the President, Mr. J. Honeyman, F.R.I.B.A., occupied the chair, and read a paper on "Recent Alterations in the Choir of Glasgow Cathedral, and Note on post-Reformation Chancel Arrangements." The operations were commenced about seven months ago with a view to improving the arrangements for the congregation, and no record having been kept of operations which were carried out about forty years ago, it was thought desirable on the present occasion to have a record kept. In the course of the operations at the west-end of the choir, he remarked, a brick sarcophagus was discovered, which had evidently been put there during the former alterations to hold the bones of the bishops whose remains had been ruthlessly taken out of their places, and as this 19th-century "kist" was a foot shorter than the lid, Mr. Honeyman remarked that this indicated the carelessness exhibited in looking after the workmen at that time, and that the workmen must have been left to double up the skeletons of the bishops if they thought proper, and to hide them out of sight in the box, believing evidently that they would never be seen again. Indicating the improvements, he said they had now covered an area of about 6,000 superficial feet with marble flooring, and the pulpit had been placed on the north side at the west end of the stalls.

ARCHÆOLOGICAL.

Beverley Minster.—A few weeks since, when workmen were excavating for a new rain-water drain from the corner of the north-west transept of Beverley Minster, they came upon the plinth of one of the walls of the Octagonal Early English Chapter-house. Further investigations have revealed the foundations and part of the walling of the other sides, as well as the circular base of the central column of the structure. It is evident that the building was of two stories, having been erected like those of Old St. Paul's, Wells, Westminster Abbey, and others, on a vaulted crypt or undercroft. This discovery is of great interest, as explaining the object of the well-known beautiful double arcaded staircase in the wall of the north aisle of the choir. The twin doors at the top of this staircase must have led by a short passage into the Chapter-house itself, the low round-headed doorway in the wall below the stairs giving access to the undercroft. When and why this beautiful building was destroyed is quite unrecorded.

Chester.—Mr. F. Haverfield writes that during some recent repairs to the North Wall of Chester, carried out by Mr. I. M. Jones, the city surveyor, 10 inscriptions, some fairly perfect, some mere fragments, several sepulchral sculptures, and many worked stones have been found. The inscriptions are all sepulchral, like 31 out of the 32 found in 1887, and were erected either to soldiers of the Chester garrison or to women. Thus one inscription records one C. Iulius Severus, a horseman of the 20th legion, who died at the age of 40; another is to the memory of two little girls, Restita and Martia, aged respectively seven and three. Both had sculptures above the inscriptions—the former a horseman, the latter a banquet scene of a kind common on ancient tombstones; but unfortunately both these are broken. There are, however, several complete sculptures of much interest. One represents a horseman riding over a fallen enemy; on another we have a rider carrying a banner. Altogether Chester may claim to have considerably increased our knowledge of Roman sepulchral sculpture.

Ethie Castle, Arbroath.—An ancient grave has just been discovered under the floor of a vaulted cellar in Ethie Castle, the Forfarshire seat of the Earl of Northesk. The Castle has been undergoing considerable alterations and repairs, and this discovery was made in the course of the work. The grave, like many which have from time to time been found in the Arbroath district, was roughly built with slabs set on edge, and it was covered with boulders. A quantity of bones were found in the grave, and by order of Lord Northesk the bones were reinterred, the grave filled up, and the cellar floor cemented.

New Discoveries at the Roman Wall.—For many years it has been supposed that everything of real importance connected with the Wall of Antoninus stretching between the Forth and the Clyde had been fully made known. Up till now the remains of the Wall, roughly speaking, were supposed to consist of the *fossa*, the *agger* or earthwork, and the traces of the road by which supplies were conveyed to the encampments. This road has been defined by Roy. It pursued a winding course, sometimes near and sometimes at a very considerable distance from the Wall. The Carron Company having made a line from their newly-opened pit at Nether Croy to the North British Railway between Dullatur and Croy Stations, it was expected that a section of the military road would thereby be exposed. This section was found, but at so great and apparently so unnecessary a distance from the Wall as to awaken a suspicion as to its genuineness. Mr. Alexander Park, factor on the Gartshore estate, therefore made a careful inspection of the ground. About 20ft. from the south side of the ditch, and 3ft. below the surface, he came upon two lines of freestone kerb, running exactly parallel with the ditch, and in a fresh state of preservation. The two lines of kerb are 14ft. apart, and their outer edges are in a straight line and laid with great care. On this lower layer there are evidences of having been strewn another layer of smaller stones, which appear to have been bound together by cement. Following up this find, he caused other trenches to be dug on Croyhill and on Castlehill, and in every case the parallel lines of freestone kerbing have been found, and also illustrations of the layers of which the structure has been formed. Altogether, the close kerbing has been already traced for nearly five miles. It is evident that the road, following, as it does, the line of the great ditch at a distance of about 30ft. from its southern lip, must have been placed at the very bottom of the earthwork which occupied the 30ft. between it and the ditch. The fortification consequently, instead of consisting, as has hitherto been supposed, merely of the *fossa* and *vallum*, had also on the south side of the latter, and running parallel with it along its entire length, this excellent military road. Mr. Whitelaw, the proprietor, will lay bare at his own cost a considerable part of the structure on several parts of the estate.

The organising committee of the Imperial Institute were informed at their meeting on Wednesday that good progress is being made with the main building at South Kensington (Mr. T. E. Collcutt being, it will be remembered, the architect), and that the administrative offices will be ready for occupation in the spring of next year. Active preparations are being made for the immediate commencement of the erection, also from Mr. T. E. Collcutt's designs, to the north of the main building of the Imperial Institute, of a permanent exhibition gallery of two floors, connecting those portions of the east and west arcades which are leased to the Institute.

The death is announced of Mr. George Robson, A.R.I.B.A., of Crowndale-road, Fulham. He received his early instruction in architecture at the Science and Art Department, South Kensington, and was afterwards engaged in the offices of Mr. H. Saxon-Snell and Mr. James Knowles. For some years he was resident architect to a large building estate in London, and was the author of a work entitled "Domestic Building Construction," published in 1876. For some time past Mr. Robson had retired from active practice.

COMPETITIONS.

Bath.—At a meeting of the School Board, held on Friday, a report was received from the assessor, Mr. E. R. Robson, F.S.A., on the four sets of plans submitted in competition for the new school to be erected in Wells-road. Mr. Robson's recommendation of the plan under motto "Experience" was adopted. It proved to be by Mr. William J. Wilcox, of Belmont, Bath.

Coventry.—Thirty-nine sets of plans have been sent in in the competition for the new Corporation baths proposed to be erected in the Pool Meadow. They have been hung on the walls of the School of Art for the inspection of the Baths Committee, who at a meeting on Friday decided to appoint a professional assessor to adjudicate the premiums.

Leicester and County Proposed New Conservative Club.—The directors of this company in September last invited competitive designs for new club premises, limiting the competition to the Conservative architects of the town. The designs, eleven in number, have been on exhibition for the last six weeks, and the services of Mr. William Jackson, President of the Leicester Society of Architects, were called into requisition to adjudge the three best plans, for which premiums were offered of £30, £20, and £10 respectively. The cost of the building was limited to £4,500, and it will stand on a most eligible site, having three street frontages, in the centre of the town. The selected design is by Mr. Frank Seale, of 3½, Belvoir-street, Leicester, to whom the first premium of £30 has been awarded. In this instance the premium is in addition to the usual 5 per cent. commission, when the work is carried out.

CHIPS.

On Wednesday week the ex-mayor of Leamington, Councillor John Fell, contractor, was, for the second time within his brief municipal career of six years, entertained by his fellow burgesses to a complimentary banquet, as an expression of their gratitude to him for the eminent services which he ungrudgingly rendered to them during his year of mayoralty, and also in celebration of the extension of the borough successfully brought to a completion.

A new Art Gallery and Public Library, at Mere Hall, Bolton, the gift of Mr. J. P. Thomasson, formerly member for the borough, was opened on Saturday. Mr. Thomasson wrote from Rome that he had secured for the exhibition a statue by Rosetti—a Vestal Tempted by Cupid. The exhibition will remain open till March.

The Leeds County Council abandoned on Wednesday a Bill which it was proposed to promote in Parliament for the consolidation of the various local Acts of Parliament, for the granting of further powers in reference to improvements and other matters. The cost of preparing the Bill has been nearly £7,000.

Mr. John Anderson, borough surveyor of Montrose, has been elected sanitary inspector to the County Council of Dumbartonshire from among several candidates.

The late Mrs. Harriet Bolckow, the second wife of the late Mr. H. W. F. Bolckow, M.P., has bequeathed to the trustees of the South Kensington Museum certain gold and silver ornaments and lace. Amongst the lace, some of which had been already lent by Mrs. Bolckow for exhibition at South Kensington, are a Brussels deep pillow lace flounce, given by Madame de Maintenon to Archbishop Fénélon, a set of Cardinal's vestments, and some remarkable old rose lace.

Mr. Alfred Groves, builder, of Milton-under-Wychwood, Oxon, has received instructions from the Rev. A. Majendie, rector, to take down the modern chancel at Bladen Church, near Woodstock, and build a new one according to designs, and under the care of, Sir A. W. Blomfield and Sons, architects.

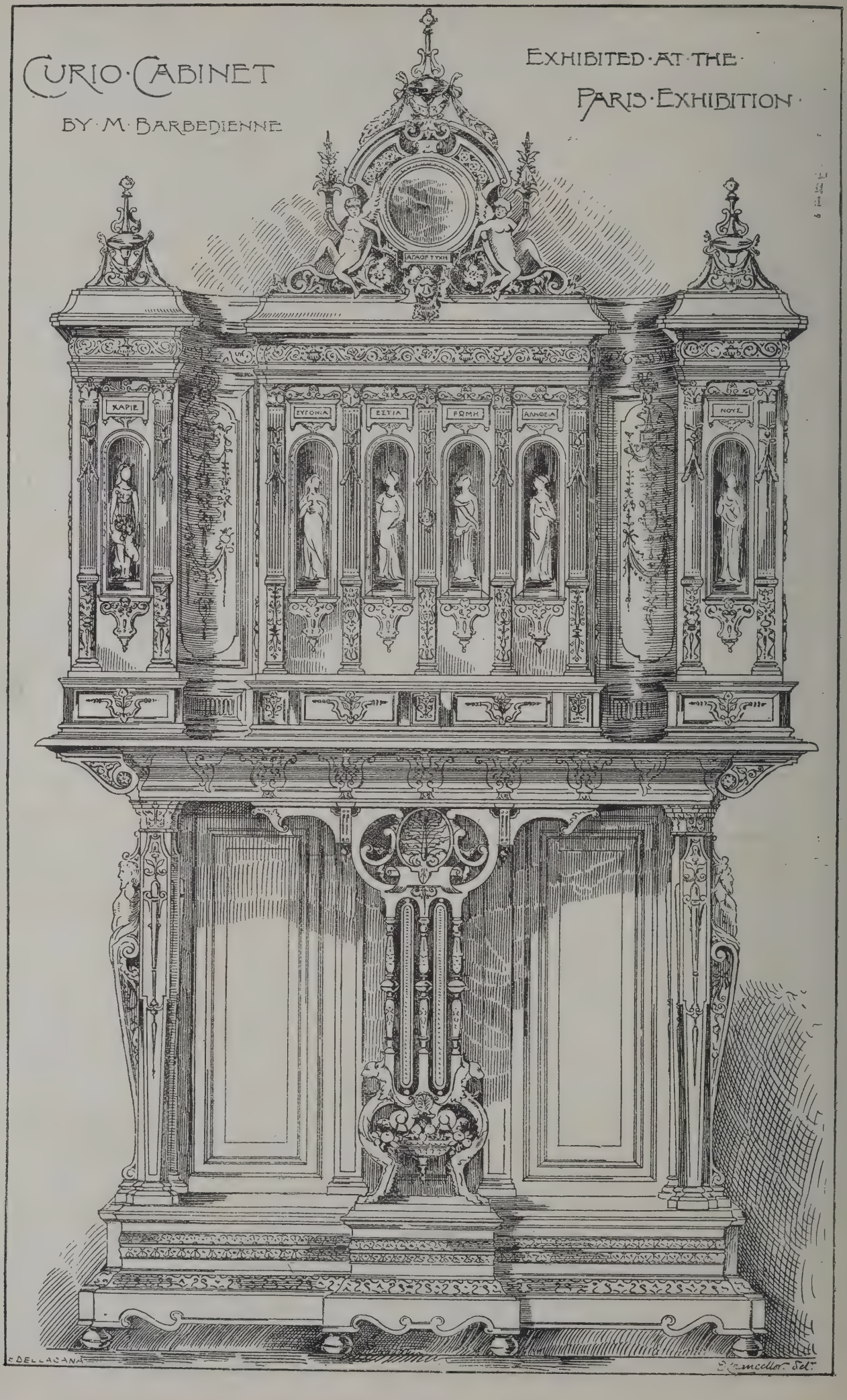
The opening meeting of the session of the Civil and Mechanical Engineers' Society took place at the Westminster Palace Hotel on Wednesday evening, when Mr. R. Nelson Boyd, M.I.C.E., the president-elect, took the chair, in succession to Professor Henry Adams, M.I.C.E. Mr. Boyd then read his opening address, the subject being "Petroleum—Past, Present, and Future."

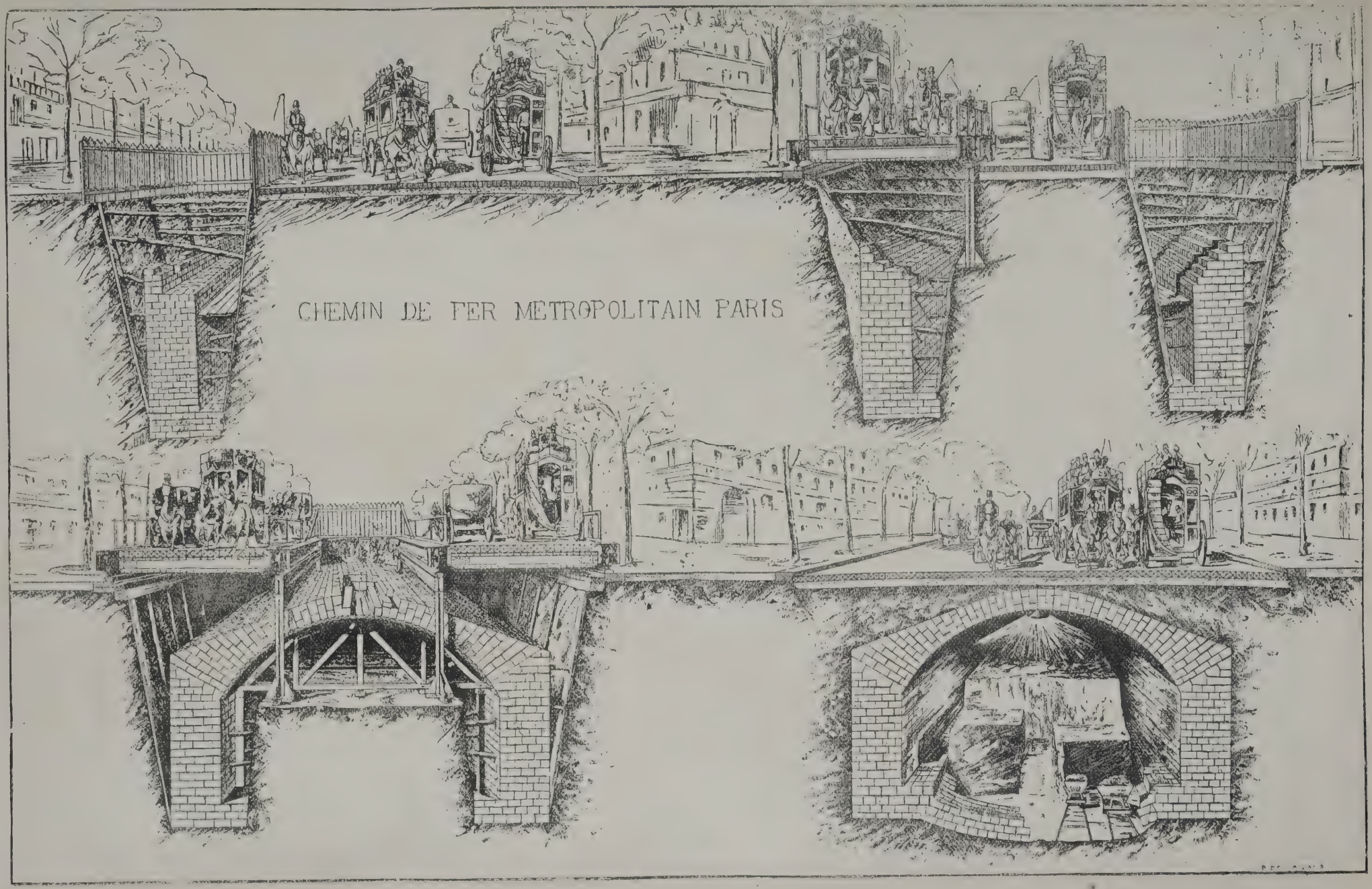
Operations have been commenced by the promoters for the construction of the Marine Drive round Douglas Head to Port Soderick, Isle of Man. A quantity of plant has arrived, and already a considerable number of men have been employed. The work is to be pushed on during the winter, and the drive is expected to be completed by next summer.

CURIO-CABINET

EXHIBITED AT THE PARIS EXHIBITION

BY M. BARBEDIENNE




CHEMIN DE FER METROPOLITAIN PARIS

Building Intelligence.

Blackpool.—At the last meeting of the Blackpool Town Council the General Purposes Committee's recommendations with respect to new Municipal Buildings were confirmed. The proposal is to purchase the plot of land in Victoria-street adjoining the town's yard, extending to Bank Hey-street. About a dozen large houses and several shops and two licensed houses will have to be pulled down, and it is intended to make a large square, in which will be included a town hall, with all the corporation offices together, as well as a free library, market, and art gallery. The intended site of the town hall has a frontage of 72ft., and extends 70ft. backwards, altogether covering an area of 5,040ft.

Bradford School Board and Mr. E. R. Robson.—At a meeting of this board, held on the 17th inst., Mr. S. P. Myers, chairman of the Sites and Buildings Committee, said in two instances recently he thought the action of the Department's architect at London was such as to entitle the board to object to his suggestions. Although the London architect knew nothing of the nature of the sites or the requirements of the district, yet the board were continually badgered by the London architect's objections, which were of an impracticable nature. In the case of extensions at Drummond-road School, the architect had objected to the length of the class-rooms, although there were already rooms of the same length. Then, at Horton Bank Top School, where the board proposed to add two class-rooms, the formation of the land being difficult, plans were sent to the Department; and thereupon there was sent by the Department a suggestion which, he felt sure, if it had emanated in the first instance from the School Board would have met with objection on the part of the Department; the suggestion was that the class-rooms should be built quite away from the main building—a plan which would not only prove inconvenient, but additionally expensive. Then the London architect objected to sky-lights, although the Department had repeatedly sanctioned such lights, and from experience the members of the board knew that a sky-light was a most desirable way of lighting large rooms. The chairman concurred in the remarks of Mr. Myers, and remarked that the Departmental architect had a salary of £750 a-year.

Bristol.—A new Medical wing will be added in the spring to University College, Bristol, from plans by Mr. F. Bligh Bond, Corn-street, in that city. It is not contemplated to add more at present to an unfinished block of the college standing back from the road, which was designed to form the back and one side of a future internal quadrangle; but the present building will represent the first section of the future grand front of the completed design, and will occupy a site next the road, and in the angle immediately above the museum buildings—a spot now used as a botanical garden. The building, which is to be constructed of local stone, with freestone dressings, will internally consist of a basement, ground, and first floor. The basement will consist merely of caretaker's rooms, vaults, and other minor offices, whilst on the ground floor will be a large medical museum 50 by 30ft., a meeting room for the faculty, a private room for the medical tutor, a students' room, with lavatories, &c.; and on the first floor will be a large library 50 by 30ft., a laboratory averaging 29 by 24ft., a physiological theatre, 28 by 24ft., and a professor's room. The estimated cost of the present portion of the undertaking is £7,000.

Leamington.—The new Turkish baths, in Priory-street, erected by Mr. F. James, of Wolverhampton, have just been completed. The exterior of the building is modest in appearance, with a frontage of 22ft., and a depth of 70ft. from the street. Inside the front door is a lobby. Those taking a first-class bath pass to the cooling-room, around which there are seventeen dressing compartments fitted with couches, and couches and tables are set in the centre of the room. The second-class bathers go from the lobby upstairs into a gallery, cut off by a heavy curtain from the lower cooling-room. Here there is accommodation for twenty. From both apartments the hot rooms are reached. The first of these has an average temperature of from 130 to 140deg., the second 160 to 180deg., and the third 200 to 240deg. The boiler and heating apparatus are in the basement, where there is also a large cellarage used for laundry purposes. The external rooms of the hot rooms are hollow to preserve the temperature. Vapour and electric baths are also provided, the latter being fitted with a battery of one hundred cells. The basement of the building is fireproof, and in the roof are water-tanks holding 600 gallons for use in case the town water should be turned off.

Lincoln.—The foundation-stones of a new Liberal club have been laid in St. Swithin's-square, Lincoln, recently. In the basement are a cellar 76ft. by 28ft., kitchen, baths, and the heating apparatus. The chief façade is of red brick and stone. The main entrance is nearly in the centre of the building, a vestibule opening into a central hall 18ft. wide. On the right of the vestibule will be a conversation-room 12ft. by 12ft., and an office 16ft. by 10ft.; and further to the right a lecture-hall 60ft. by 30ft., capable of seating 500 persons. There will be a separate front entrance to this hall, at the south end of which will be two cloak-rooms and offices. On the left of the central hall will be a reading-room 26ft. by 22ft.; the bar, with manager's room adjoining, and a smoke-room 32ft. by 22ft. A staircase will lead to the billiard-room, 62ft. by 26ft., which will occupy the entire front of the building on the first floor. Two French windows in the billiard-room will give access to a verandah 22ft. long, over the main entrance. Above the smoke-room will be a room 24ft. by 22ft. available for cards and other games. The library, 14ft. by 10ft., and the directors' room, 16ft. by 14ft., are also on the first floor; and at the back will stand the caretaker's apartments, consisting of sitting-room and three bedrooms. All the rooms throughout the building will be 15ft. in height. The architects are Messrs. Sington and Brameld, of Manchester. Irrespective of the land, the club will cost £3,000. Messrs. Lansdown and Son, of Lincoln, are the contractors, and Mr. Simpson is clerk of the works.

Ludlow.—The Lady Chapel of the parish church is now being restored under a scheme prepared by the Charity Commissioners for the management of a legacy of £2,000 by Maria Alicia Johanna Nightingale. The stained-glass Jesse window is being restored by Messrs. Hardman, of Birmingham, at an estimated cost of £630. The stone tracery of the whole of the windows, together with the ashlar work of the exterior, is also being replaced by Mr. John Thompson, Peterborough, at an estimated cost of £580. During the progress of the work a discovery has been made of an old priest's door and a considerable amount of carved Early English tracery. The old tile pavement in the doorway of the 14th century has been exposed. The probable existence of these remains was alluded to by Mr. Irvine at the restoration of the interior thirty years ago, and the details now discovered correspond exactly with Mr. Irvine's theory as to the Early English building, which the present Late Perpendicular one had superseded. A large portion of the legacy has been appropriated for the purpose of improving the organ. Messrs. Gray and Davison have been intrusted with the work, which is now being carried out at a cost of £450.

Manchester.—The governing body of Owens College have adopted plans prepared by their architect, Mr. A. Waterhouse, R.A., for a further block of buildings to cover the whole of a site, measuring 170ft. by 99ft., immediately adjoining the western side of the present Medical Schools, and occupying the space between Coupland-street, Lloyd-street, and Walter-street. The principal entrance to the new block is in Coupland-street, at the north-east corner of the site. The porch leads by a vestibule to the Dean's room, 23ft. by 14ft., and the public waiting-room, 16½ft. by 14ft., attached to it. The Dean's room also communicates directly with the professors' common-room, 20½ft. by 14ft., and with the central corridor of the building. From the entrance porch and vestibule a corridor 12ft. wide runs along the whole of the eastern end of the building, terminating in the principal staircase at the south-east angle of the site, and opening near the centre on the one hand into a bridge communication with the heart of the old building, which is repeated on the upper floors, and on the other into the main 15ft. corridor, which forms the axis of the new schools. This central artery has a secondary staircase at its further end, and is lighted by an extension of its width for a length of 61ft. under a central area. Flanking this main corridor are professors' retiring-rooms, students' locker room, and lavatory, and the two large lecture theatres, 60ft. by 38ft. and 50ft. by 38ft. respectively, with a preparation-room, 38ft. by 19½ft., for the smaller lecture theatre. Other rooms are one for students, 42ft. by 23ft.; one for experimental research, 30ft. by 23ft.; one for galvanometer, 16ft. by 11ft.; an experimental room, 40ft. by 30ft.; and a workroom, 23ft. by 13½ft.; diagram-room, 23ft. by 12ft.; and preparation-room, 30ft. by 13½ft. On the first floor are a number of rooms for the pathology and physiology sections, and on the floor above are other classrooms and a lavatory, 94ft. by 30ft., for histology. This large room has a gallery at the level of the floor above (the third floor) extending all round the room, and is lighted by windows. Other rooms are provided on the third and top floor. With the exception of the centrifugalising apparatus chamber (which, however, is shared by the gas-engine and dynamo for electric-lighting purposes) and one or two possible spare rooms, the whole of the basement is given over to storage purposes, to the heating apparatus, coals, and engineer's workshop, while in the end next Lloyd-street and a part adjoining the present is proposed to use low-pressure hot water for heating, and the ventilation will be effected as regards inlet of fresh air by vertical inlets in connection with the hot-water coils, and in respect of extract of foul air by shafts below the corridor floors communicating directly with a ventilating shaft. In the elevations generally everything has been subordinated to the one dominant idea of getting an absolute maximum of window area. Welsh buff brick and stone sparingly introduced are employed in maintaining harmony with the existing schools. The floors are fireproof only in the corridors, staircases, and such rooms as require cutting off from the noise and heat of the basement service departments, and where the floors are not double the concrete is covered with a wood-block floor.

Thelwall.—Alterations and additions are being made to the parish church of Thelwall, near Warrington. A new north aisle, almost equalling the size of the nave, is being added, as well also as a very large organ-chamber, and a choir and clergy vestry. The benches, which were of pitch-pine, have been removed from the church, and will be replaced with oak benches throughout, whilst the floor under will be of pitch-pine blocks. The new aisle will have an open-timbered, heavy pitch-pine roof. The walls will be of Rainhill and Helsby stone. The work is Early English in character, with bold mouldings to the windows, which will be in treble and single lights. The church will be ready for reopening in February next. The work is being carried out by Mr. Beckett, of Hartford, from the designs of Mr. W. Owen, of Warrington.

Whalton.—The chancel of this parish church has been restored and fitted up with marble pavement and steps, richly carved oak rood-screen, choir seats, and altar-rails. The east window has been raised 2ft. higher in the wall, thus giving space for a dossal with side hangings. A part of the old plaster has been removed from the south wall, laying bare the traces of an ancient low side window, close to the east wall, and sedilia which had been destroyed and walled up apparently in the 15th century, a piscina and credence table combined taking the place of the sedilia, with an almery. In raising the modern east window, it was found that the inside arch was made of a large grave-slab, with a floriated cross and sword incised upon it. This had been cut away to give it an arched form, and the incised cross covered with plaster. It was accidentally broken in two while it was being taken down, and before it was discovered to be an ancient grave-slab. Its remains will be preserved with other memorials. The rood screen has delicate traceries and cresting and carved inscriptions on both sides. The marble pavement, of Frosterley, Sicilian, and Sienna marbles, was supplied and laid by Messrs. Emley and Sons, of Newcastle-on-Tyne. The oak-work was made by Mr. Ralph Hedley, of Newcastle; the contractors for the alterations of floors and east window were Messrs. Carse and Sons, of Amble; and the whole of the work was carried out from the designs of Messrs. Hicks and Charlewood, architects, of Newcastle.

The sum of £80,000 is to be expended at Sydney, N.S.W., in building an art gallery for that city.

THE VICE-REGAL PALACE AT SANTA FE, NEW MEXICO.

THE sound of the hammer, the saw, and the trowel, the Santa Fé *New Mexican* says, makes a merry echo-song in and about this historic adobe palace to-day. The (U.S.) National Government has supplied the funds, and Secretary Thomas has let the contract for 3,000dol. worth of improvements or, more properly speaking, repairs, on this ancient official edifice, so full of interest to all tourists and sight-seers who visit Santa Fé. The workmen have taken possession of the building, and in 60 days will have completed their task.

The Governor's palace is in much the same condition as last year, except that the additional lapse of time has made the need of repairs more pressing. The secretary of the territory, who is its custodian, has obtained an appropriation of 3,000dol. from Congress for this purpose, and while this sum is considerably less than that which he estimated to be necessary, yet it will do much to preserve this interesting historic edifice in fair condition.

This ancient palace surpasses in historic interest and value any other place or object in the United States. It antedates the settlement of Jamestown by nine years, and that of Plymouth by 22 years, and has stood during the 292 years since its erection, not as a cold rock or monument with no claim upon the interest of humanity except the bare fact of its continued existence, but as the living centre of everything of historical importance in the southwest. Through all that long period, whether under Spanish, Pueblo, Mexican, or American control, it has been the seat of power and authority. Whether the ruler was called viceroy, captain-general, political chief, department commander, or governor, and whether he presided over a kingdom, a province, a department, or a territory, this has been his official residence. In his recent annual report to the secretary of the Interior, Governor Prince takes occasion to present some highly interesting data relative to this structure, tracing its history from the departure thence of Onate in 1599 on his adventurous expedition to the Eastern plains, to the formal taking possession of the new territory by General Kearney on behalf of the United States Government in August 1848.

THE ARCHITECTURAL ORDERS.

MR. PHENE SPIERS, F.S.A., has compiled from Normand's Parallels, Chambers, Gwilt, Nicholson, and other authorities, a set of useful outline plates of the Greek, Roman, and Italian orders.* To these he has added three new plates, making a series of twenty small folio sheets. The need of such an authorised collection of drawings to good scale, shown in a practical manner and issued at a moderate price, has long been felt by those engaged in preparing students for the compulsory examination in architecture, for pupils in offices, and members of the elementary classes of the Architectural Association. Mr. Spiers, as head master of the Architectural School at the Royal Academy has had special opportunities of learning the wants of students, and he has gone to the best authors, such as Mauch, for his delineations of the Orders. Although the system of calculating the proportions of an Order and its parts in relation to the lower diameter of the column has become customary, it has been thought better here to retain, in Normand's plates, the module or half-diameter, with its various subdivisions as engraved on the original plates, giving in most cases, however, the diameters as alternatives for the chief parts, and the terms, of course, in English, instead of French. The examples are represented by the Temple of Theseus, Athens; Theatre of Marcellus, Rome; the Doric and Ionic Orders of Vignola; Temple at Eleusis; the Choragic Monument of Lysicrates, Athens; Temple of Jupiter Stator, Rome; the Pantheon, Rome; Temple of Augustus and Faustina, Rome; Temple of Vesta, Tivoli; Basilica of Antoninus, Rome; Composite Order of Palladio; the Erechtheum, Athens; and four sheets of Classic ornament, with another on the drawing and setting-out of the Ionic volute. Some of Mr. Horsley's outlines of foliage are rather clumsy, and indicate a dislike for the necessity of exactitude, so dominant in pure Classic art—a restriction not by any means insisted upon in the Free Classic or Queen Anne school. The book is handy and well bound in a simple cloth cover, admirably adapted to the use of the studio, classroom, and office. For schools of art the folio cannot fail to be useful.

* The Orders of Architecture: Greek, Roman, and Italian. By R. Phene Spiers, F.R.I.B.A., F.S.A. London: B. T. Batsford.

AMERICAN ENGINEERING.

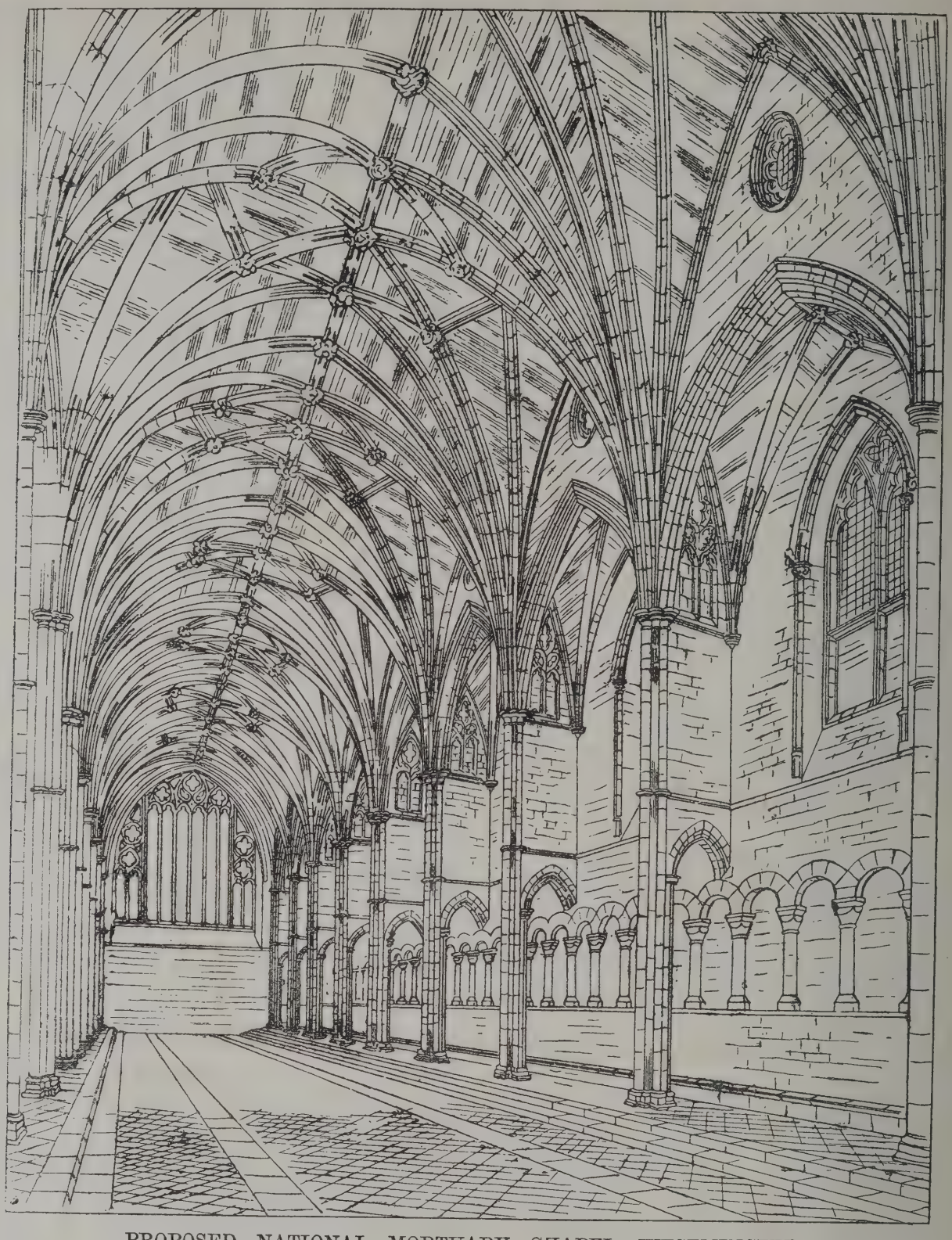
THE *Transactions* of the American Society of Engineers for September contains two papers of interest. One describes "The Cheapest Railroad in the World," by Arthur Pew. This railroad was from Wrightsville to Dublin, two Georgia villages 19 miles apart; the country is rather rough. The grading commenced with convict labour; the greater part of the line was through pine forests, and the clearing was done for the width of the road, which was 14ft. wide in cuttings and 10ft. wide on "fills," the gradings averaging about 4,000 cubic yards per mile. The convicts were employed under skilled foremen in hewing timbers and building trestles, and these structures were built entirely of trees that had grown within 200ft. of the structure. The track was laid with 45lb. iron rails, fastened with fish-plates, bolted and full-spiked. The ties were of Georgia pine, hewn on two sides, and were laid at the rate of 2,640 to the mile. The total cost was 1164·49 dollars per mile, exclusive of rails. All the conditions were favourable.

The paper by Lewis M. Haupt on "Littoral Movements of the New Jersey Coasts, with Remarks on Beach Protection and Jetty Reaction," is particularly instructive. Professor Haupt shows there is a determinate direction to the movement of littoral drift, and that it forms the most important element in obstructing the navigable channel of inlets, and that little aid can be obtained from the use of parallel or convergent jetting for removing bars by the scour from concentrated ebb currents. The author discusses the predominating forces causing movement, and points out the defects of the wind-wave theory in explaining the resultant direction of drift. Professor Haupt's theory is the development of a flood component, which causes the littoral movement along the shores, and the formation of inlets. He draws conclusions as to the best method of improving harbours on alluvial coasts, and proposes a plan for creating and maintaining deep-water channels over the bars of harbours. Several interesting photographic illustrations accompany the paper, besides maps of inlets, coast chart of Boston Bay, charts of soundings, reaction breakwater at Aransas Bay. The principle advocated of a curved jetty instead of a straight one, in assisting to deepen channels, is an important point in Professor Haupt's paper.

PROPOSED NATIONAL MORTUARY CHAPEL, WESTMINSTER.

[WITH ILLUSTRATIONS.]

THE Royal Commission appointed to inquire into the present want of room for burials and monuments in Westminster Abbey has just published its first report, and the evidence is extremely interesting, particularly the historical record printed by Dean Bradley, who seems to have taken great pains to bring together much useful information connected with the interments which have at various periods occurred within the church and its precincts. Mr. Wright, the clerk of the works, furnished particulars of recent date, estimating that room sufficient for about 50 more bodies could still be found in the Abbey; but the concrete of the foundations has already, it seems, been encroached upon for graves in some parts of the building, principally in Poet's Corner. Mr. John L. Pearson, R.A., the architect to the Abbey since 1879, questioned the clerk of works' estimate as to the room remaining for further interments, but saw no objection to excavating the concreted parts for the purpose of finding places for burials. The chairman, the Right Honourable D. R. Plunket, First Commissioner of H.M. Works, read at length our description of Sir Gilbert Scott's design for the National Campo Santo at Westminster, published when we illustrated (Feb. 29, 1884), that plan, which was 460ft. long by about 40ft. wide. These proportions Mr. Pearson thought objectionable, and he also very rightly condemned the late Mr. Fergusson's plan, made public subsequently. We publish to-day the plan showing the scheme prepared for the intended building by Mr. Pearson, by which it will be seen that the original extent of the structure has been very considerably reduced, and instead of the vast cloister extending along Abingdon-street in a southerly direction to Great College-street, is made to take the form of a nave with double aisles, on a site in Old Palace-yard. All four aisles, as well as the nave, are to have apsidal ends. At present only the nave and north aisles are proposed to be built, leaving those on the south for future extension. The chapel is so designed as to throw open the view of the Chapter House and Henry VII.'s chapel, from Old Palace-yard, and by keeping the aisles low in elevation, the second aisle much lower than the first, this end is certainly gained. Besides the five apsidal east ends, Mr. Pearson shows three northern chapels, each with canted ends, the only rectilinear part of his composition being the very low cloister leading from Poet's Corner in the south transept to the new memorial chapel. We think the effect would be most unfortunate if this were executed in immediate conjunction with the ornate apse of Henry VII.'s chapel, with all its minor rounded parts, and close to the great octagon of the Chapter House. It should also be borne in mind that the radiating chapels of the abbey choir will be seen, and again at this point the grouping is dominated by the vast apse of the main building. Whatever faults of proportion may be noticed in Sir Gilbert Scott's plan, he, at least, realised the stern necessity of keeping his work well in contrast with the existing lines of the Abbey church, and besides, the need of making his cloister sufficiently subsidiary to it. The breadth, too, of the Early style which Sir Gilbert suggested, assisted this idea. Mr. Pearson, with a degree of reserve which may be termed astuteness, supplies no architectural treatment for the elevation of his plan, but he says that he would "make it of a Late style to show that the building was an addition." As, however, we have in Henry VII.'s chapel almost the Latest possible phase of Gothic architecture, we cannot quite see the force of this argument. In point of fact, whatever style Mr. Pearson, or any other modern architect, works in, there can be no mistake about the chapel thus erected being recognised as an addition, and unless the dreary "Late and Flat" be embraced, it is not easy to see what choice of style remains for adoption in that case. Of course, Elizabethan or Renaissance would be "Late"; but such styles undoubtedly are out of the question. We do not suppose but what Mr. Pearson would make a suitable choice of style in accord with the Abbey and Houses of Parliament, as he assures us. Indeed, we will go further, and say that if his plans are determined upon, the wisest thing to do would be to leave the design architecturally entirely to him, unfettered in every way. We only wish to point out the questionableness of the above specious argument of his as to style. We protest, however, against the shape of the building proposed in his plan. The site indicated is the best, no doubt, and there is little force in the plea that the structure ought to be made more an intrinsic part of the Abbey proper. It is said that the distinction of being buried in the Abbey is the great idea associated with a national funeral at Westminster; but whether the bodies are actually interred within the church proper, or in the so-called Campo Santo, will soon cease to be of any moment. Another proposal made by Mr. Pearson is to erect on the site of the Refectory a monumental chapel, incorporating with it some parts of the ruined structure, so far as they will serve. It would be 130ft. long by 37ft. 5in. wide, and 28ft. between the piers. We give Mr. Pearson's sketch of the interior, and he says he thinks it would form a very charming building. The cost is reckoned by him at £30,000, and he estimates the alternative chapel, already described, for the Old Palace Yard site at £60,000, exclusive of the cost of removing existing houses, &c. Perpendicular architecture of a Late type would be used for this larger scheme, so that it might "look like an addition." For the refectory scheme the style of the windows to be preserved would settle the character of the design—viz., 15th-century work. The Archbishop's objection to this latter plan, that the idea of sanctity and dignity attaching to burial in the Abbey would not be transferred to a sort of restored dining-hall, is, we agree, fatal. So, too, is the objection raised by his Grace against the new north aisle, or third scheme, brought forward by the architect to the



PROPOSED NATIONAL MORTUARY CHAPEL, WESTMINSTER.

Abbey, by which a chapel would be erected on the disused graveyard, and extending along the nave from the north transept to Wren's western towers. This erection would hide the only clear view now obtainable of the abbey church, and, besides, would make a very ungainly arrangement. Among the other plans illustrated in the Commissioner's report is one by Mr. Somers Clarke, F.S.A., who wisely adopts square forms, and, like most of the other architects who suggest schemes, selects the old Palace Yard site. He encroaches, however, too much on the view of the abbey from this point of sight, and his chapel would hide the greater part of the chapter-house and adjacent buildings. Besides this, the buttresses of the chapter-house would very much interfere with the carrying out of his idea. Mr. J. P. Seddon, in conjunction with Mr. Lawrence Harvey, contributes a plan providing a building further south, connected by a cloister skirting the site of St. Catherine's chapel, and extending to the corner of Abingdon-street, with an octagonal treatment at the end, entered by a triangular porch over the pavement. Between the chapter-house buttresses small chapels are proposed. This latter part of Mr. Seddon's scheme is adopted also by Mr. E. J. Tarver, F.S.A., who thus proposes to accommodate 350 monuments under skylights. The idea is ingenious, but quite out of accord with the secular use of the chapter-house, and it found little favour with the Commissioners, among whom were Sir Fredk. Leighton, P.R.A., and Mr. Alfred Waterhouse, R.A., P.R.I.B.A. The report ends with a useful list of burials in Westminster Abbey.

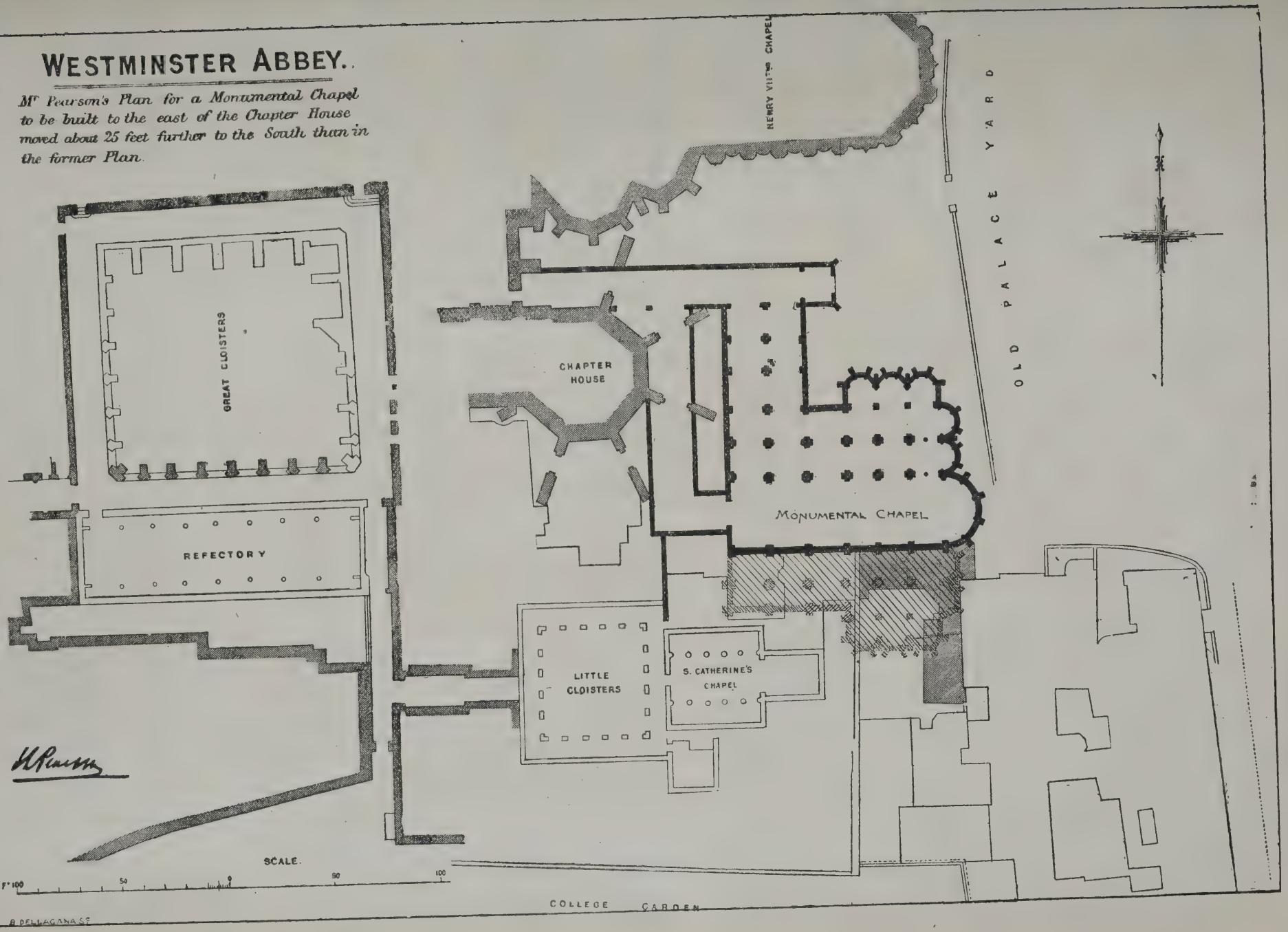
Mr. Stewart, burgh surveyor of Brechin, has been appointed to a similar office under the town council of Arbroath.

A new Fisher-lads' Home has been erected at Grimsby, and special attention has been paid to the ventilation, which is carried out on the Boyle system, the latest improved form of the self-acting air-pump ventilator being adopted for the extraction of the vitiated air.

The Sanitary Institute carried out in Leeds, on Friday and Saturday last, an examination for inspectors of nuisances. The examiners were Mr. H. Percy Boulnois, M.Inst.C.E., of Liverpool; Dr. Louis Parkes, London; Mr. Ernest Turner, F.R.I.B.A., London; and Dr. B. A. Whitelegge, Medical Officer of Health, West Riding of Yorkshire. The registrar (Mr. G. J. Symons, F.R.S.) and the secretary of the institute (Mr. E. White Wallis) superintended the arrangements. Leeds is to be the Institute's examination centre for the Midlands, and at this, the first examination, there were thirty candidates, most of them from Yorkshire and Lancashire, but others from as far south as Northampton, and as far north as Aberdeen and Inverness.

WESTMINSTER ABBEY.

Mr Pearson's Plan for a Monumental Chapel to be built to the east of the Chapter House moved about 25 feet further to the South than in the former Plan.



Engineering Notes.

ANOTHER GREAT BRIDGE FOR NEW YORK.—The preliminary steps have been taken, the *American Architect* says, in the matter of the construction of a bridge across the Hudson River from Jersey City to New York, and work on the bridge itself will be commenced in the spring. The plan is to cross the river at or near the foot of Forty-second-street. The bridge will be 150ft. above tide-level, but the railroad on the New Jersey side, which at that point slopes rapidly to the water, can reach it directly with a very moderate grade, and on the New York side it is intended to carry the connecting roads by viaducts to the entrance of the bridge. The whole affair is intended almost exclusively for railroad use. There will be a footpath across, but no carriageway. Instead of this, there are to be either six or eight tracks, so as to admit an almost unlimited amount of railway traffic, a part of the scheme consisting in the erection of an immense station at the New York end of the bridge. As the plans of the bridge have been approved by the War Department, little remains but to carry them out. It is said to be intended to issue fifteen million dollars in stock, and thirty-five millions in bonds.

CRYSTAL PALACE SCHOOL OF ENGINEERING.—Major F. A. Marindin, inspector of railways to the Board of Trade, on Saturday distributed certificates to the students of this school in the south tower of the Crystal Palace. Mr. Shenton having read the reports of the examiners for the winter session, the close of the eighteenth year of the school upon which the certificates were awarded, Major Marindin congratulated the students and their instructors on the gratifying report of the work of the term. He had, he said, been struck by the quality of the models exhibited, and the excellent drawings in the civil engineering section.

THE FORTH DEFENCES.—The alterations which have been going on for fully six months in connection with the fortifications on the Island of Inchkeith are only the beginning of an extensive scheme which the War Department is carrying out for the improvement of the Forth defences. Messrs. Meikle, of Ayr, have the contract for the work on Inchkeith, which includes the removal of No. 1 and 2 batteries, and the construction of others in their stead. Already both the 18-ton guns have been dismounted, and the immense blocks of granite, weighing about six tons each, required in the construction of the gun-seats, have been bodily removed, and set aside for use at Kinghornness. These were firmly bedded in concrete, and the work of removal was carried out with much difficulty. The new batteries are to be built of cement, instead of granite. No. 1 is finished, and No. 2 is being rapidly pushed forward. The War Department contemplate the construction of a harbour on the island sufficient to admit steamers with passengers or provisions at all states of the tide. This, however, is dependent on a satisfactory issue of the negotiations going on between the Department and the Duke of Buccleuch with the view of acquiring the island. At Kinghornness a staff of engineers have just completed a survey of the additional ground required.

Inquiry was held at Horbury by Colonel J. Orde Hasted, R.E., an inspector from the Local Government Board, on the 18th inst., touching the application of the Horbury Local Board for sanction to borrow the sum of £4,200 for street improvements in the township. Mr. T. Barker, clerk and solicitor to the Local Board, explained that the principal improvement sought to be carried out was the widening of Westfield-road, between Horbury and the borough of Ossett.

The new branch line from the Harrow Station of the London and North Western Railway system to Stanmore, was formally opened by Mr. George Findlay on Thursday of last week. The line, which is two miles in length, has been constructed from plans by Mr. Beswick Myers, M.Inst.C.E., by a company, the cost having been about £36,000. Mr. Charles Braddock, of Wigan, was the contractor.

The death is announced, in his 80th year, of Auguste L. M. Ottin, formerly a well-known Parisian sculptor. Perhaps his best work is the group of Acis and Galatea surprised by Polyphemus, an adjunct to the Medici Fountain in the Luxemburg Garden.

TO CORRESPONDENTS.

[We do not hold ourselves responsible for the opinions of our correspondents. All communications should be drawn up as briefly as possible, as there are many claimants upon the space allotted to correspondents.]

It is particularly requested that all drawings and all communications respecting illustrations or literary matter should be addressed to the EDITOR of the BUILDING NEWS, 332, Strand, W.C., and not to members of the staff by name. Delay is not unfrequently otherwise caused. All drawings and other communications are sent at contributors' risks, and the Editor will not undertake to pay for, or be liable for, unsought contributions.

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RECEIVED.—J. W. and R.—B. Co.—T. T.

J. P. LOVELL. (Yes, we shall give more architects' portraits with some others; but the continued fogs have hindered our reproductions of the photographs already in hand.)

"BUILDING NEWS" DESIGNING CLUB.

THIRD LIST OF SUBJECTS.

C.—A small stone-built Mountain Church to seat 300 persons, including choir of six men and eight boys. Church to have central tower for bells, with small lead-covered spire, but no transepts or aisles. The font, pulpit, and seating benches to be shown on the plan. The vestry is to accommodate choir as well as priest, and the organ-chamber is to open into chancel by a roomy arch, and be large enough to take a good-sized organ suitable for such a building. A south porch to be included, and a heating-chamber under vestry. The site is supposed to fall rapidly from the N.W., not less than one in ten. Style, 14th century. Scale, 8ft. to the inch. Sufficient drawings to illustrate design, including perspective sketch.

DRAWINGS RECEIVED.—"Black Prince," "Higs," "St. Edmond," "Philomath."

Correspondence.

BOMBAY MUNICIPAL BUILDINGS.

To the Editor of the BUILDING NEWS.

SIR,—With reference to the illustrations of the above-mentioned buildings, published in your issue of the 7th inst., may I solicit the favour of a corner in your valuable paper for the two following letters?—

Baroda, 16th March, 1889.

To His Excellency, The Right Hon. Lord Reay, LL.D., G.C.I.E., &c., &c.

MY LORD,—I see by the public papers that you have inspected the plans prepared for the new municipal offices, showing that this subject interests you beyond your official position as the Governor in Council of this Presidency.

I have the honour respectfully to bring to your lordship's notice the following facts in connection with this matter:

First, that I fairly gained the first prize for these buildings in open competition.

Secondly, that for three years I have danced to municipal piping without any remuneration.

Thirdly, that during this period I was regarded generally as the accredited architect of the proposed buildings, and that I did nothing to forfeit the good opinion of the municipality as a body.

Fourthly, that at the very moment when a successor was appointed in due form, I was actually preparing, under the orders of the municipality, and with the sanction and approval of your lordship's government—a plan for the oval site.

I would respectfully point out that the plans now accepted are identical with my own, as regards the position on the site, the widths and heights of the several apartments and verandahs, and that while bulk for bulk the buildings are practically the same, my successor has been allowed nearly twice the sum of money.

I feel certain that your lordship altogether desires to see fair play, and to secure for this presidency a building worthy of its renown, and confidently relying on your lordship's keen sense of justice, I pray that when these municipal proceedings are placed before your lordship in council for confirmation, that you will bear the above facts in mind.

In conclusion, I would respectfully suggest an equitable way of dealing with the matter. As the *plans* and *style* have been approved, permit me to submit elevations and a perspective view from the same point of sight, and in the same style, and let the respective merits of the two designs be adjudicated by Messrs. Ewan Christian, Waterhouse, and Pearson. These proceedings would cost nothing beyond the judges' fees. No delay would be occasioned, as the buildings up to ground level would be identical, the public would be satisfied that the best building of its style had been secured, and I myself, when vanquished, satisfied that I had been fairly and honourably beaten.

I have the honour to be
Your lordship's most obedient servant,
R. F. CHISHOLM.

Mahableshwar, 16th April, 1889.

DEAR SIR,—I am desired to acknowledge receipt of your letter of March 16th, and to say that the remarks therein will receive every consideration should the papers referred to come before Government for orders.

Yours faithfully,
G. W. EDGELLEY, Private Secretary.

I may mention that it has taken me many months to discover either that the Government of Bombay have changed the official method of procedure, or that the buildings in question are being carried on by the Municipality without the sanction of the Bombay Government.—I am, &c.,
R. F. CHISHOLM.

Intercommunication.

QUESTIONS.

[10463.]—**Penstock Chamber.**—Will some reader kindly tell me how to construct a double penstock chamber to receive sewage and surface water, to contain two penstocks, and be arranged so that the surface water can be used for flushing purposes if required?—F. R.

[10464.]—**Hoggin.**—Will someone please tell me the meaning of this term?—M.

[10465.]—**Gas-Stove (Calorigen).**—Can anyone tell me why this gas-stove has ordinary light-giving burners instead of a Bunsen burner? The light is shut off by an iron door, so it cannot be on the score of cheerfulness.—M.

REPLIES.

[10451.]—**Gas-Stove.**—Water would be condensed by the gas independently of pipe being in cold room. Cannot the pipe be made to have a slight fall towards the room in which the stove is placed, and a small hole made in the bottom elbow of the pipe, with a tray placed under same to catch the condensation.—C. F. M.

[10454.]—**Hot-water Pipes.**—The surveyor is no doubt right in insisting on the pipes being kept 3in. away from woodwork.—G. H. G.

[10454.]—**Hot-water Pipes.**—I was not aware that "not hermetically sealed" was a common definition of a low-pressure hot-water supply system. Is "hermetically sealed" not a new expression introduced by Mr. Nesbit? Amongst the other mistakes he makes on page 878 is the assertion that the heat in a low-pressure water-supply system never exceeds 212° F. I think it often does so where there are large fires and the plumber has not given the expansion or blow-off pipe a rise in every part of its course. I have seen a strong lead pipe swelled out with the heat and pressure like an egg, just as if it had been frozen. When the water in the boiler boils, and the steam cannot get freely away, and the supply cistern is 40ft. above the boiler, why should not the heat get up to above 212° F.? Mr. A. P. Jevon is wrong in saying "W.'s" expansion-pipe is not necessary, as "W." appears to state that his water-supply cistern is a cold one, not a hot one. Mr. Crane's reply seems to refer to a system of hot-water heating; but "W.," on page 842, asks about a "hot-water supply."—W. P. BUCHAN.

[10455.]—**Legal.**—It is the most desirable course to inform the client that a bill of quantities should be taken out, though when a client orders plans, specifications, and desires tenders to be obtained, his architect has an implied right to have them taken out.—G. H. G.

[10457.]—**Pointing during Frost.**—Bricklaying is carried on in Sweden and Norway during frosty weather by using unslaked lime, gauged in small quantities as required, and thoroughly dry bricks. But this, I believe, is only applicable when the joints are "struck as the work proceeds," and not to "raking out and pointing." There have been several substances recommended for rendering mortar impregnable to frost (see BUILDING NEWS, p. 813 *ante*); but it is very doubtful whether they would be of use for merely pointing, even if the brickwork was dry; and if the walls had been previously wet, and

therefore "frozen" when the pointing is done, I feel sure it would be ineffectual. There is also a limit to the number of degrees of frost which the hot-lime mortar will stand; I fancy about 15° Fahr. There is no getting away from the fact that to obtain thoroughly good work, bricklaying should be entirely suspended during frosty weather, unless in such a position that the work is, or can be, protected from the frost. If "Frost" values good work, and does not wish to have the pointing, in all probability, to do over again, I should advise him to wait until the frosty weather is over.—Neville Davis.

[10458.]—**Torching Inside Old Roof.** — Good lime-and-hair mortar, well pressed in, and not just smeared over the outsides of joints. Would asphalte, which in this case would have to be applied in a plastic state, withstand the heat of the sun in summer?—Neville Davis.

[10458.]—**Torching Inside Old Roof.**—Lime-and-hair mortar. The answer to second part of question is "No."—C. F. M.

[10459.]—**Quantities.**—I should say not. If you give a tailor an order for a coat, you cannot demand a paper pattern he may have had to cut, and a copy of the dimensions he took.—R. Watson.

[10460.]—**Powers of Local Authorities.**—Outside the Metropolis the local authorities are urban and rural sanitary authorities. If your authority is a rural authority, you may build up to the road, so long as you do not encroach upon it. If urban, it will depend upon their by-laws. Your best plan is to see the authority's surveyor.—N. D.

[10461.]—**Water Engineering.**—By far the most elaborate work on the subject is Humber's "Water Supply of Cities and Towns" (Crosby Lockwood). There is also Bateman's "Water Supply: History and Description of the Manchester Waterworks" (Spon). A very useful little book for a student is Hughes's "Treatise on Waterworks" (Weale's Series); and the article on waterworks in Spon's "Dictionary of Engineering" is well worth reading, and can be obtained in a separate number.—Neville Davis.

LEGAL INTELLIGENCE.

The Building of St. Cuthbert's Church, Edinburgh.—In the Scottish Court of Session held at Edinburgh, the action was partly heard on Thursday, Friday, and Saturday last, in which James Steel, builder, of Edinburgh, sought to prevent the kirk session of St. Cuthbert, Edinburgh, from interfering with the churchyard in connection with the projected re-erection of the church. One of the witnesses for the kirk session was Dr. Hunter Stewart, who stated that he had been pursuing a scientific examination of the air in public buildings in Edinburgh for the last three years. He had been requested by the Town Council to examine the air in some of the schools, and he extended it for his own information and theirs to churches and theatres and the like. In pursuance of that course, he went to St. Cuthbert's on Sunday, 4th November, 1888. His visits had nothing whatever to do with the questions that have since arisen. Witness sat in Dr. MacGregor's pew in the forenoon, an assistant sat in the lower gallery, and another in the upper gallery. Each took a sample of the air. Analyses showed that the air of the top gallery contained 48·7 parts carbonic acid in 10,000 parts of air, the middle gallery 54·3 parts carbonic acid in 10,000 parts. On the evening of the same Sunday samples were again taken, and on analysis they showed that the air in the upper gallery contained 62·25 parts carbonic acid in 10,000 parts, the lower 63·5 parts carbonic acid in 10,000 parts, and the area 48·7 parts carbonic acid in 10,000 parts. The air in the lobby contained 62 parts carbonic acid in 10,000 parts of air. The external air in St. Cuthbert's graveyard contained 4·3 parts carbonic acid per 10,000 parts. He stated that in one of the largest churches in Edinburgh, examined at the close of a forenoon service, the sample of the air at the front seat of the gallery showed 43 parts per 10,000, and in that church there were complaints both by clergymen and congregation as to headaches after service. He gave other cases of analysis varying from 30 parts per 10,000 in the church to 16 parts in the schoolroom, nine parts in theatre, to show how very much more defective the ventilation in St. Cuthbert's was than even the worst of the instances given. There were few recorded cases of air as bad as it was. The cubic space per sitter was only 113ft. per head. Cross-examined: To improve the ventilation in the present church would not be an improvement at all, because by no system of ventilation could the present church be made sanitary if the present number of sitters were retained. Professor Crum Brown gave corroborative evidence. John Cooper, burgh engineer, Edinburgh, in examination, said he had expressed approval of the plans regarding the proposed alterations. James Walker, partner of Brown and Walker, surveyors, Edinburgh, gave evidence relative to the measurement of Mr. Hippolyte J. Blanc's plans for the proposed alterations.—Lord Stormouth-Darling, the presiding judge, has taken the case to avizandum.

The trustees of the Nicholson Institute at Leek have resolved to open the art galleries, museum, and reading-rooms on Sunday afternoons and evenings. This decision has given great satisfaction to a large majority of the inhabitants of the town.

WATER SUPPLY AND SANITARY MATTERS.

Chester-le-Street. — The Chester-le-Street Union Rural Sanitary Authority have approved of four schemes of main sewerage and sewage disposal for (1) Birtley, (2) Witton Gilbert, (3) Sacriston and Daisy Hill, and (4) Edmondsley in the county of Durham, with a total estimated population of 10,000, per plans prepared by Mr. D. Balfour, M.Inst.C.E., F.G.S., 3, St. Nicholas Buildings, Newcastle-on-Tyne. The main sewerage embraces about 12 miles of pipe sewers, and the sewage will be purified by the process of intermittent land filtration, the total cost being estimated at £14,000. The necessary steps for the compulsory purchase of the land are now being taken.

Glasgow.—The refuse-despatch works which have just been erected at Kelvinhaugh by the Corporation of Glasgow were formally inaugurated on Wednesday week. The works are situated on the site of the old Mansion-house, and are connected with a mineral siding at Yorkhill Station. The main floor of the machinery-house is on the highest level, and the refuse falls from the carts through a short shoot into a revolving screen, from which all the finer material passes into a mixer, where other manurial refuse is introduced, and forms a compost, which is thrown into the railway waggons and despatched for agricultural purposes. By a catching arrangement the cinders are extracted, and they are sufficient to raise steam for the whole of the works. The rougher rubbish falls on to a travelling carrier—an endless revolving web of iron plates and chains. Meat-tins, old iron, and anything which can be profitably utilised can be picked off as they pass along the carrier. There is stable accommodation, and four tenements of suitable dwelling-houses have been erected on the ground for the workmen who require to be at hand. The chimney stalk in connection with the works is 300ft. high. The ground cost £11,950, and the buildings and works, £16,000. These works were designed by the Cleansing Committee, with the assistance of Mr. Clark as architect, and of Mr. John Young, the superintendent of cleansing to the corporation.

Knaresborough.—At a special meeting of the Knaresborough and Tentergate Improvement Commissioners and Local Board of Health, held on Monday in the Town Hall, Knaresborough, Mr. B. T. Wood, J.P. (chairman), presiding, Mr. D. Balfour, Newcastle-on-Tyne, presented complete plans and estimates for a scheme of main sewerage and sewage disposal for the town of Knaresborough, which the board unanimously agreed to adopt. The scheme shows two main outfall sewers, one for the east part of the town, by Chain-lane, and the other for the west part, along the side of the River Nidd, joining together at Grimbald Bridge, thence on to the land for sewage disposal at the Haugh's Farm, lower down the river, where the sewage will be purified by the process of intermittent land filtration, without the use of any chemicals whatever, sufficient and suitable land being available there. The scheme is being carried out to avoid the impending injunction of Lady Hawley's trustees for polluting the Frogmire Dike, which passes through the Haya Park Estate before reaching the River Nidd.

Open Ventilators for Sewers.—A special meeting of the town council of Newark-on-Trent has been held to consider a report prepared by the borough surveyor, Mr. George Shepperd, on the subject of the open ventilators of sewers. The investigation was a result of complaints having been made that offensive smells proceeded from these ventilators. The report states that the total length of sewers now ventilated was 4¼ miles, which included only two of the seven sections into which the town had been divided, leaving five sections unventilated. From recent examination all the manholes and flushing-tanks had been found to be free from deposit, and in several localities ventilating shafts had been erected to relieve the grates. Reference was made to between 70 and 80 towns which have adopted the open grid system of ventilation. In these places very few shafts were in use. The borough surveyor in his report strongly recommended the continuance and completion of the system throughout the town, together with constant flushing, the use of disinfectants, and ventilation of private drains. In his opinion he was backed up by the opinions of several sanitary engineers. He quoted the opinion of Dr. Angus Smith, who stated "a rather wild clamour has taken place about sewers, and bad as their gases are, the danger arising from them has been much exaggerated." He also appended the following letter from Mr. E. B. Ellice Clark:—"Dear Sir,—You have asked me to solve a very difficult problem in a few answers. Will you allow me to suggest that the subject of sewage ventilation is far too complex for any decision to be come to by answers to your queries. I have been investigating the subject for fifteen years, and have made many thousands of observations—but I am by no means satisfied that I know the best means of effecting sewer ventilation. The evidence as yet goes to prove—(*a*) that open ventilators at the street level are most effective; (*b*) That on no account should they be closed; (*c*) That the nuisance arising from them may be greatly mitigated by having shafts of large diameter (at least 24 square inches) carried up the sides of houses between the open street ventilators; (*d*) That flushing with cold water has a marked effect for good upon sewer air; (*e*) That no one system is applicable to every system of sewers.—Yours faithfully, E. R. Ellice Clark, M.Inst.C.E." The Mayor read a recommendation from the sanitary committee to close certain "dead ends" of sewers and moved its adoption, and Mr. Millthorp seconded the proposition. An amendment that the sewer ventilators be closed was proposed. A long discussion followed, and the amendment being put to the vote, was lost, three only voting for it, and the original proposition was carried.

The Pollution of the Rivers Irwell and Mersey.—Colonel Ducat, R.E., and Mr. T. W. Thompson, inspectors of the Local Government Board, have held at the Assize Courts, Manchester, an inquiry into an application which has been made by the County Councils of Chester and Lancaster, under sub-section 3 of section 14 of the Local Government Act, 1888, to the Local Government Board, for power by provisional order "to constitute a joint-committee representing the administrative counties of Chester, Derby, and Lancaster, and certain county boroughs, the said counties and county boroughs being those through or by which the river Irwell or any tributary thereof passes, or through or by which so much of the river Mersey as is above the intersection by the said river of the southern boundary of the borough of Warrington, and to confer on such committee the powers of a sanitary authority under the Rivers Pollution Prevention Act, 1876. The chief witnesses were Mr. Hulton, clerk, and Mr. Hibbert, chairman of the Lancashire County Council, Dr. E. Sargeant, their medical officer of health; and opposition was manifested by representatives of Ashton-under-Lyne, Eales, and other boroughs which feel themselves slighted by the proposals.

CHIPS.

A life-sized portrait of the donor of the art gallery to Liverpool, painted by Mr. W. Q. Orchardson, R.A., was presented on Tuesday, the 23rd inst., to Sir A. B. Walker, in the gallery which bears his name. The canvas, which is oblong in shape, represents Sir Andrew in morning costume, seated in an armchair before a writing-table covered with correspondence.

A scheme for providing a public park for Wakefield is maturing successfully. £6,000 towards the £6,500 required has been promised, and the committee which has the matter in hand has instructed Mr. Arthur Fawcett, surveyor, of that city, to prepare an outline plan, prior to advertising for designs from landscape gardeners for laying out the grounds.

A large organ erected in Eccles parish church by Mr. James J. Binns, of Bramley, at a cost of over £2,000, was dedicated on Saturday last. The organ is constructed throughout with tubular pneumatic action, and is placed on the north and south sides of the chancel screens, 15ft. above the floor. The great feature is the position of the console, which is placed on the south side of chancel at the end of the choir seats, the tubes being carried under the chancel floor, those on the north side being 90ft. from the console. The inside metal pipes are spotted metal, the outside pipes of electro-plated zinc.

The parochial committee of Leighton Buzzard have recommended to the rural sanitary authority the adoption of a drainage and water supply scheme prepared under the motto "Forward" by Mr. Nicholls.

At the monthly meeting of the Masonic Lodge, No. 261, Unanimity and Sincerity, held at the Masonic Hall, Taunton, on Wednesday last, Mr. George C. Strawbridge, M.S.A., the senior warden, was unanimously elected master for the ensuing year. The ceremony of installation will be performed in January.

At the conclusion of the service in Dunblane Cathedral on Sunday, the Rev. Mr. Ritchie intimated that that was the last service which would be held in the cathedral as it now stands. The masons having finished the restoration of the nave, a start is now to be made with the restoration of the choir, which has been used as the parish church since the Reformation.

A memorial to the late General Sir Howard Elphinstone is being erected in the garrison chapel at Devonport, and will be unveiled in January, probably by the Duke of Edinburgh. The memorial is a suitably-inscribed marble tablet.

The town council of Stoke-on-Trent have voted their borough surveyor, Mr. J. Pattison, an increase of £50 a-year to his salary.

Our Office Table.

A memorial as to the present condition of the monuments of Ancient Egypt, signed by over 650 persons interested in the question, including architects, painters, and sculptors, students of history and archæology, lovers of art, and others, has just been presented to Lord Salisbury. The memorialists call attention to the priceless value of the wall sculptures and decoration of the Egyptian temples, which themselves are fitting shrines for their wealth of artistic design. They point out that "the destruction which has been in progress during centuries has of late years been carried on with increased intensity. The growing prosperity of the country has naturally created a demand for building materials, and the ancient monuments are now, as formerly, resorted to as convenient quarries. Miracles of the sculptor's art, and vast wall spaces on which are inscribed the documents relating to the earliest civilisation, are broken up for rubble or cast into the limekiln. But the worst cases of destruction have arisen from other causes, as in the recent notorious mutilations of Beni-Hassan, where the paintings and sculptures have been cut away for sale." They ask Lord Salisbury to direct the British Agent at Cairo to move the Egyptian Government to appoint a qualified official inspector instructed to submit, with a view to their publication, yearly reports of his proceedings.

The London School Board, at their last meeting, considered what terms should be made with the quantity surveyors employed by them for taking the quantities for schools proposed to be built from duplicated plans. At present a commission of 1 per cent. on the amount of contract is paid to the quantity surveyors, and the professional men employed (Messrs. Arding, Bond, and Buzzard, Mr. Frederick Downing, Mr. Charles G. Dunning, Mr. F. H. A. Hardcastle, and Mr. Henry Lovegrove) intimated that they would be willing to accept, as now, 1 per cent. in each case on the first school of a kind, and in the case of buildings duplicated above the ground floor, a uniform reduced rate of ¾ per cent. for the work comprised under the head of "main" building, and including latrines, urinals, and drains. This arrangement has been accepted by the Board as reasonable under the circumstances.

At the same meeting of the School Board, a special report was received from Mr. T. J. Bailey, their architect, with reference to the proposed enlargement of the Board offices. Mr. Bailey said that the work, being of a special nature, could only be done at periods when he was not preoccupied. At the sacrifice of his private time and annual holidays, he had prepared the general scheme, which had been approved in principle by the Education Department; but, having regard to the pressure of work in his office, he did not see a possibility of further taking up the work for a time, and suggested that it might be desirable to intrust the completion of the plans and the execution of the work to an outside architect. The Board accepted the suggestion, and instructed the works committee to ask a number of architects to state the terms on which they would be willing to carry out the enlargement, and to make a selection.

The project conceived a twelvemonth since by some members of the Birmingham Photographic Society, of making a complete survey of Warwickshire by camera, is making good progress, and it is expected that next autumn will see the work so far completed that an exhibition of the members' work can be held. It will be recollected that some 200 photographers, professional and amateur, residing within this county have agreed to take part in the work, and a committee of antiquarians and others have charge of the arrangements. The plan decided on is that each member is to take each a small portion of the county—say, a square mile—as marked out on the Ordnance map, and to photograph the churches, the other historical buildings, and the remarkable geographical, geological, biographical, ethnological, and botanical specimens or scenes contained within that area. A preliminary exhibition of work already done is being shown at the Temperance Hall, Temple-street, Birmingham, by Mr. J. B. Stone, the president of the society. The photographs include Duddeston Hall, the house of Galton the banker, the two pages of the perishable burial register of Aston Church, pages which are supposed, from their date, to contain the names of soldiers who fell in the Civil War, two views of the old chancel of Aston Church, now destroyed; many photos of Edgbaston old church prior to its restoration, Castle Bromwich Hall before it was injured by fire, the font at Coleshill Church, etc. Messrs. E. C. Middleton and C. J. Fowler have made a trip down the romantic and beautiful valley of the Severn, from its source on bleak Plynlimmon to its mouth in the Bristol Channel, and brought back no fewer than 240 scenes, now hung with Mr. Stone's views.

Few towns are more rapidly increasing in population and commercial prosperity than is Cardiff, and this growth, due to the development of the coal and shipping interests, is manifesting itself alike in the number of new buildings erected, and in the reconstruction to more imposing scale of business premises in the main thoroughfares. According to a tabulated report presented to the Cardiff Corporation by the borough surveyor, there have been approved during the present year by the Public Works Committee 13 plans for new streets, 722 for houses, 44 for shops, two for places of worship, four for schools, and 153 for other buildings. During the preceding five years building operations were going on at a similar rate, for in 1885 the number of plans passed were for houses and shops 1,345, and for all other buildings 258, while in the following year the numbers were 1,201 and 227 respectively; in 1887, 1,226 and 194; and in 1888, 1,062 and 189. Last year there was, and for the first time, a marked falling off, the numbers being 603 and 163; but there has been a perceptible rise again during the twelvemonth now being completed.

The Birmingham Museum and Art Gallery has this week been enriched by the gift from Mr. S. Jevons of a collection of illuminated manuscripts, printed books, and carved ivories, which fill two large cases in the Italian Gallery and Industrial Hall. The first case contains books dating from the 14th to the 18th century, and illustrates the gradual development of the art. Among the more important exhibits are a copy of the Koran, written and illuminated on a roll of thin paper; an illuminated Flemish Book of Hours in manuscript on vellum, dating from the end of the 14th century; a French Book of Hours, dated Paris, 1497; the Codex of Saxo-Ferrato, one of the earliest printed books with a date; an illuminated choral book and scored church missal, both Italian, 15th century; a large church choir book in the original binding with the arms of the Medici family; "The Jewish Prophets," by Martin Luther, with illustrations by Lucas Cranach, Wittemberg, 1543; and a book of etchings, "The Horrors of War," by J. Callot, printed in Amsterdam, 1633. The second case contains a collection of carvings in ivory, the work of Flemish, Scandinavian, German, Russian, Italian, and Japanese carvers being illuminated.

Mr. J. A. Cossins, architect, of Birmingham, who is in consultation with the Estates Committee upon the structural inconveniences of the Birmingham Town Hall, has lately discovered the original competitive design for the building, which was sent in to the Town Commissioners by Messrs. Hansom and Welch, the architects. It is not merely an architectural drawing of perfect fidelity, but a clever picture, in which the hall is surrounded by a busy throng of inhabitants, whose quaint costumes are in singular contrast with the dress of the present day. It has been preserved with the care which its merits as well as its extrinsic interest ought to have procured for it. The draughtsman was the late Mr. Harris, father of Mr. H. H. Harris, and an inscription on the back of the drawing records that it was presented by the architects "to the late Charles Fiddian."

The lecture arrangements for the ensuing session of the Royal Institution, include an address by Dr. E. Emanuel Klein, on Friday, Feb. 20th, on "Infectious Diseases: their Nature, Cause, and Mode of Spread"; and one by Professor W. E. Ayton, F.R.S., on Friday, March 20th, entitled "Electric Meters, Motors, and Money Matters." Short courses, each of three lectures, will be given by Mr. W. Martin Conway, F.S.A., on Saturdays Jan. 24 and 31, and Feb. 7, on "Pre-Greek Schools of Art"; and by Professor C. Meymott Tidy, on Thursdays, March 5, 12, and 19, on "Modern Chemistry in relation to Sanitation."

The Press view of the Fine Art section of the Glasgow East End Industrial Exhibition was on Saturday. A very interesting collection of loan pictures in oil and water-colour, and of old line engravings, has been got together in a building which, till recently, was the workshop of a reformatory. The exhibition affords an excellent representation of works by artists bred in Scotland, some of the more worthy being by Sam Bough, Paul Chambers, Erskine Nichols, J. Milne Donald, and Alexander Fraser. There is also a small collection of works by English painters, including specimens from the brushes of Godfrey Kneller, Hogarth, Constable, Bonnington, Herring, Clarkson Stansfield, Creswick, Cotman, De Wint, and of the more modern works some by Cecil Lawson, John Linnell, and Sidney Cooper. Sir John Millais is represented by "Lady Carew Getting Violets," Burne Jones by three pencil sketches, and Sir John Gilbert by some powerful drawings. The Arts and Crafts section is made up of exhibits by the pupils of Mr. Newbury, head master of the Glasgow School of Art.

CHIPS.

M. Gustave Revilliod, the well-known Geneva bibliophile and author, who died on Sunday at Cairo, aged 74, has left a legacy to Geneva of several million francs, and has also bequeathed to it a splendid museum, called the "Ariana," situated near Geneva, which is frequently visited by tourists.

The new Wesleyan chapel, Brook-road, Walton, Liverpool, has just been opened. The chapel has cost £3,700. Messrs. Briggs and Wolstenholme (Liverpool and Blackburn) are the architects, and Mr. M'Dermott (Bootle) the builder. Accommodation is provided for over 600 worshippers.

A new organ in Redgrave Church, Suffolk, built by Messrs. Casson and Co., of London, at a cost of £300, was dedicated on Wednesday week.

The marble memorial pulpit for St. Michael's Parish Church, Crieff, presented by ex-Provost M'Rosty, one of the elders, was formally inaugurated on Sunday by the Right Rev. Dr. Boyd, of St. Andrew's, Moderator of the General Assembly. The pulpit is the work of Mr. D. Beveridge, sculpor, Perth. The body is of Sicilian marble, is Gothic in character, and octagonal in form. It is supported by eight columns of coloured marble, the dark tints of which set off the clear white of the upper structure, while the lower base is formed of polished Peterhead granite. The front panel bears a figure in relief representing the Saviour delivering the Sermon on the Mount, and is from the chisel of Mr. Stevenson, Edinburgh, while the other panels are filled in with verses from the Beatitudes.

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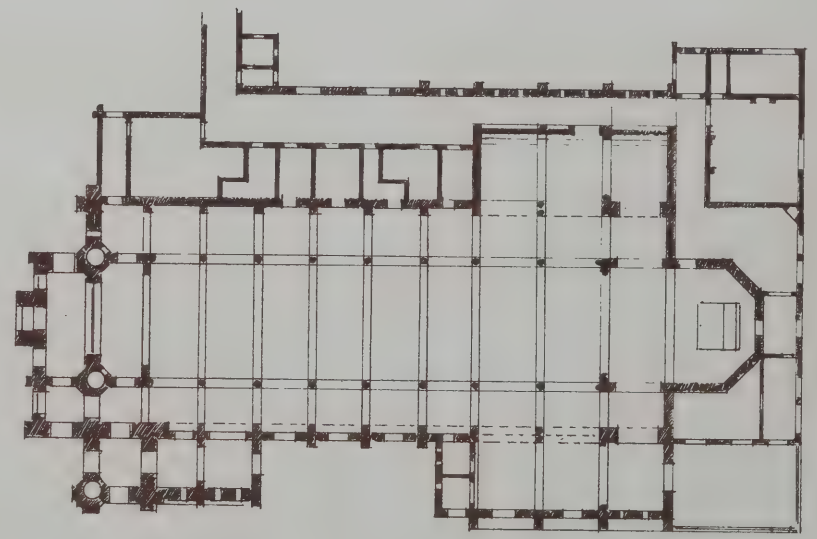
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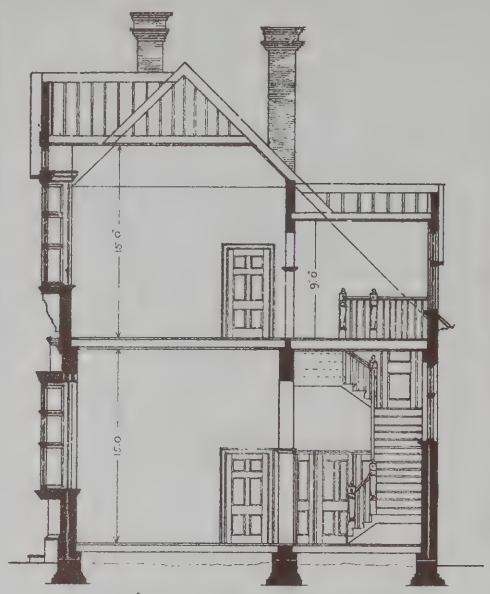


Church of the English Martyrs, Preston.

for the Rev. Dean Pyke. — Pugin & Pugin Archts



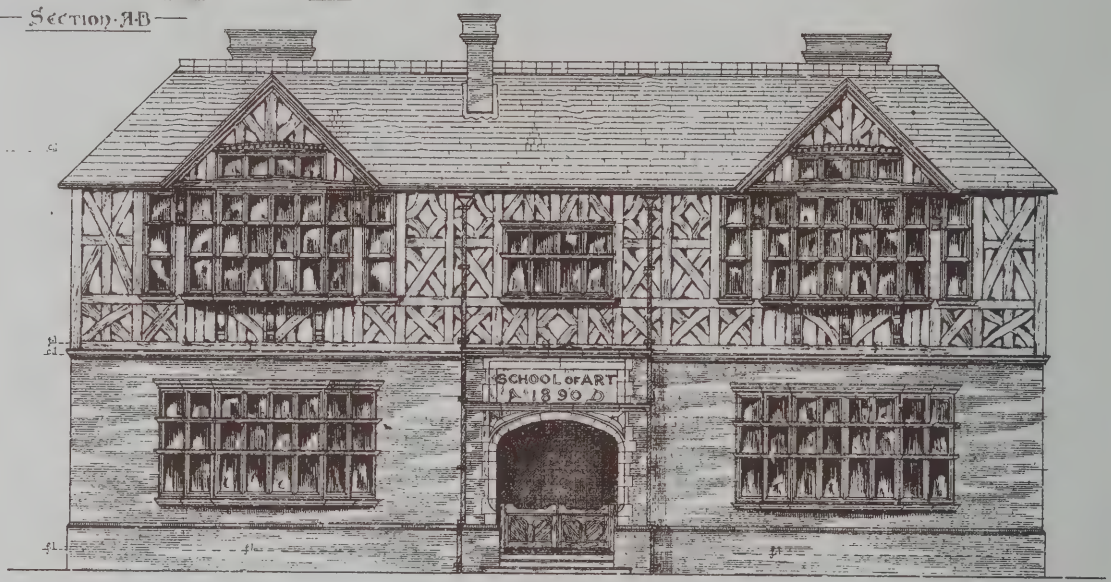
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— SECTION A-B —



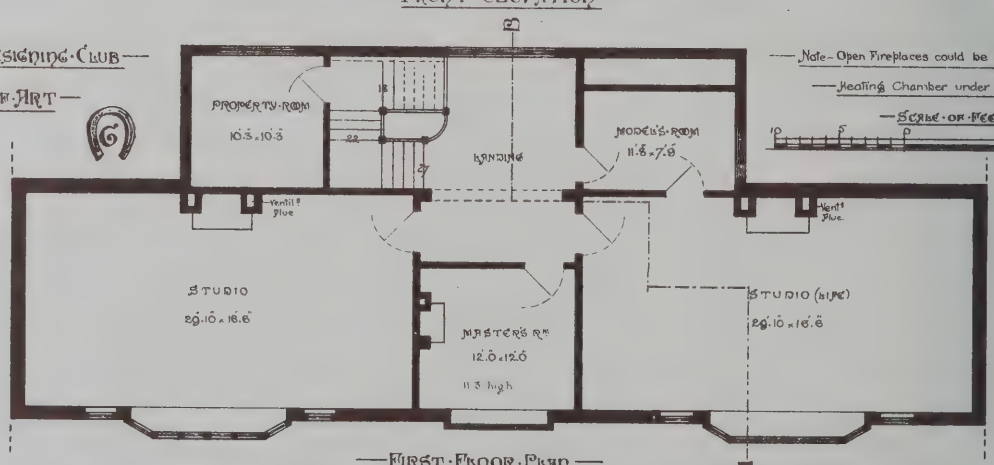
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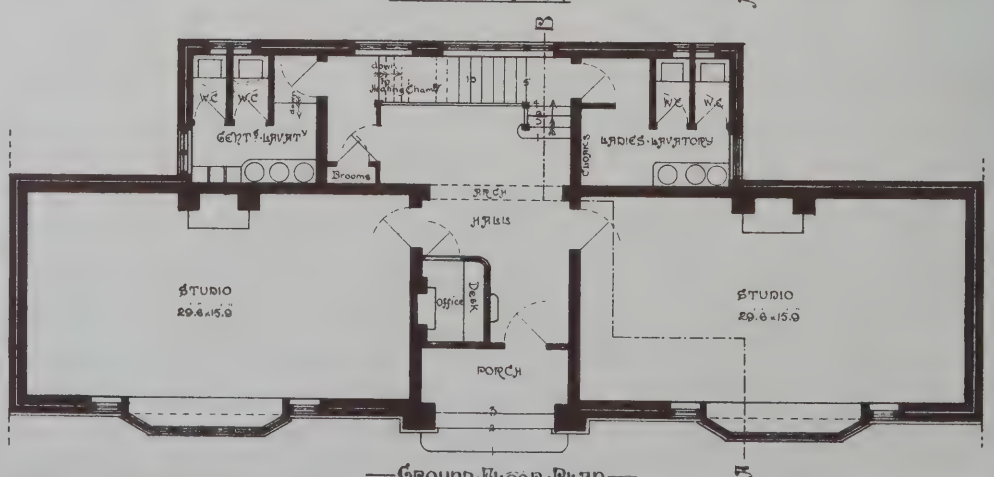
— FRONT ELEVATION —

"BUILDING NEWS" DESIGNING CLUB

— A SCHOOL OF ART —



— FIRST FLOOR PLAN —



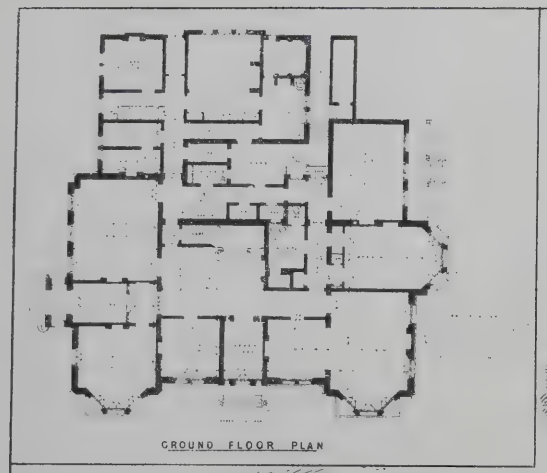
— GROUND FLOOR PLAN —

— Note — Open Fireplaces could be omitted —

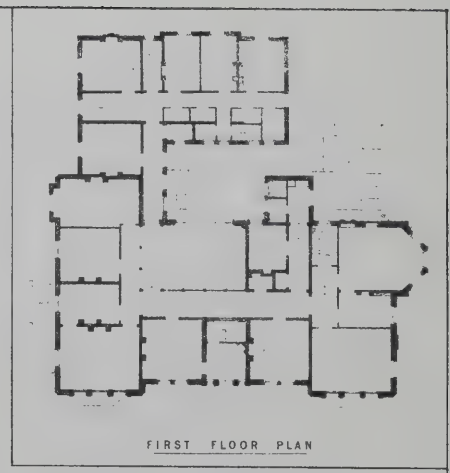
— Heating Chamber under Hall —

— SCALE OF FEET —

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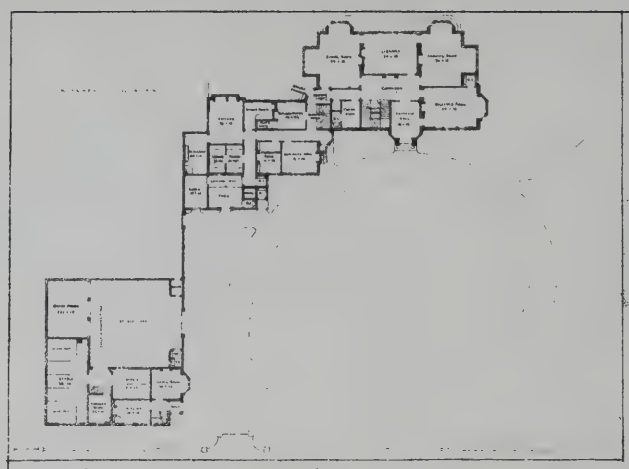


GROUND FLOOR PLAN

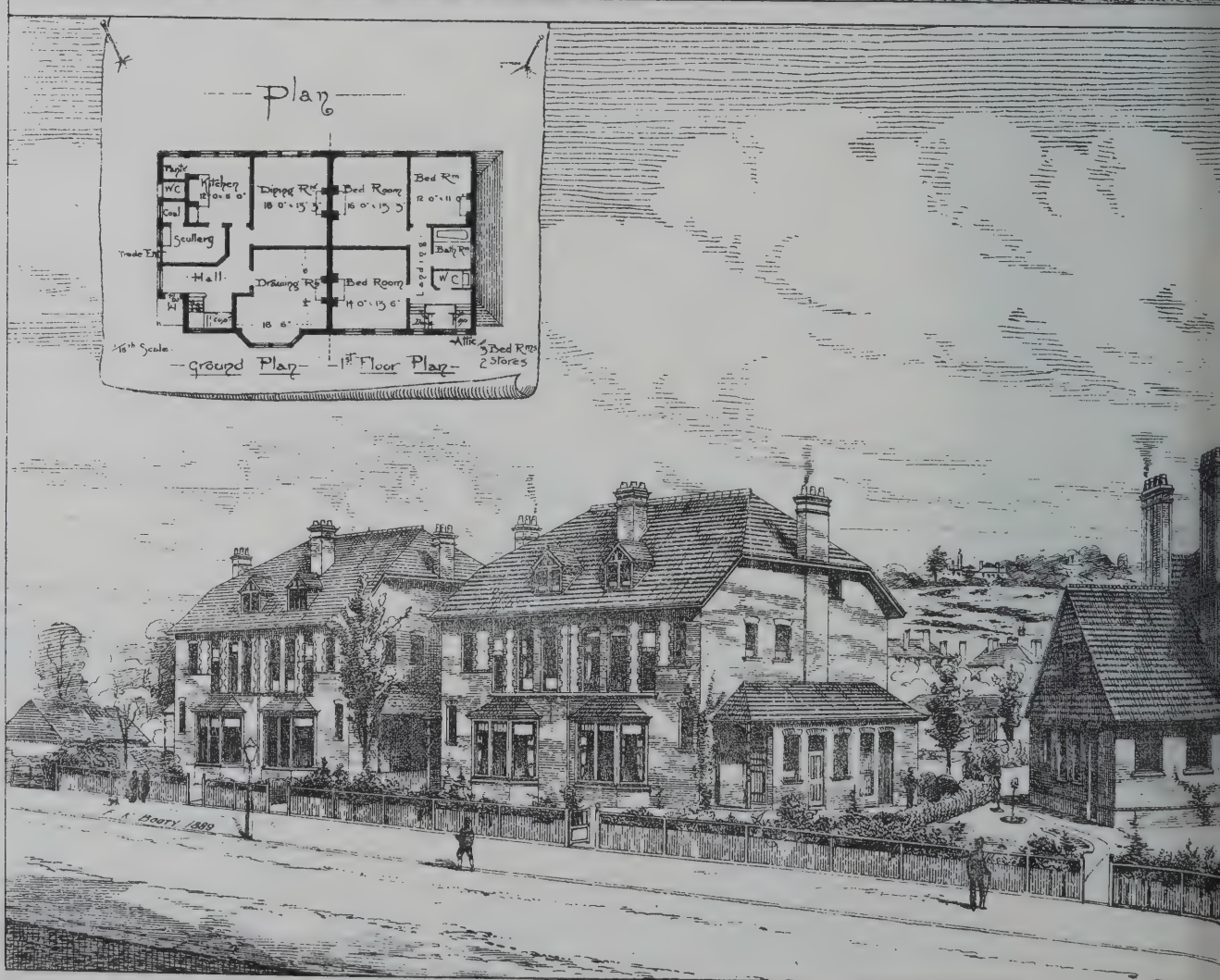


FIRST FLOOR PLAN

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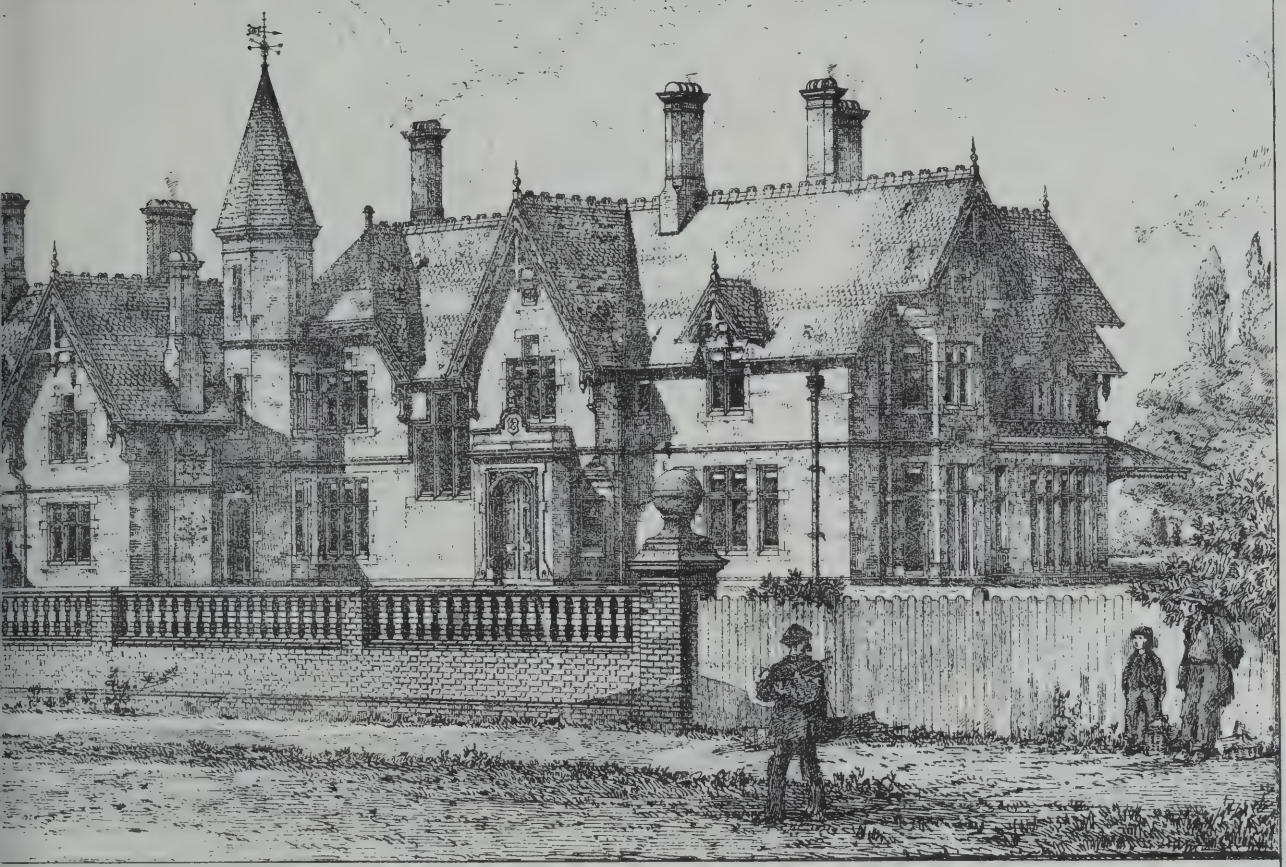




HOUSES · AT · TUNBRIDGE-WELLS · K

26.1890.

"CHESFIELD" · HAMPTON-WICK · J·G·FINCH·NOYES·ARCHT



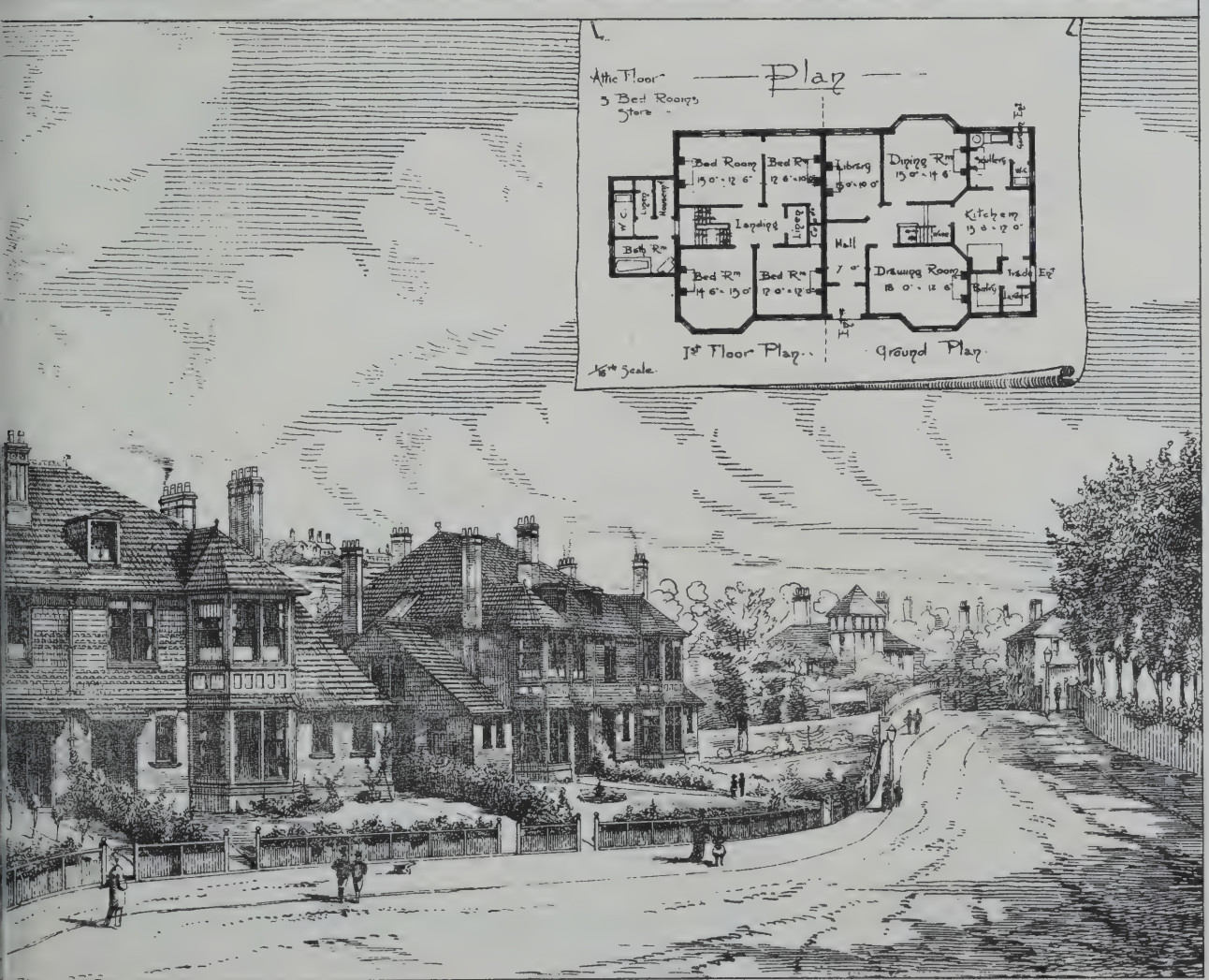
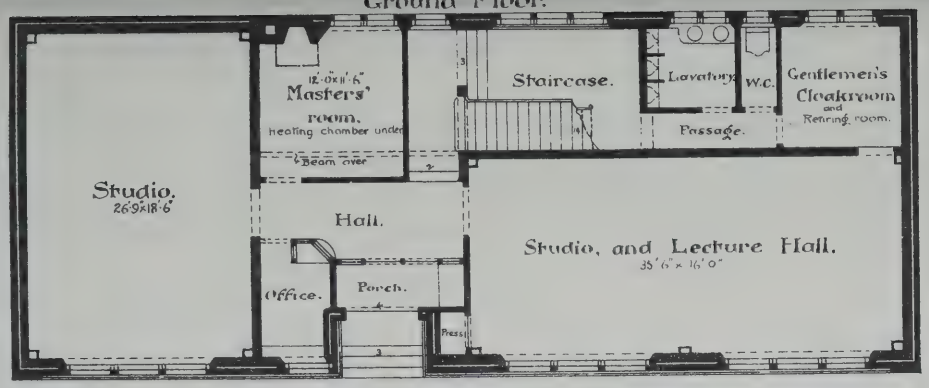
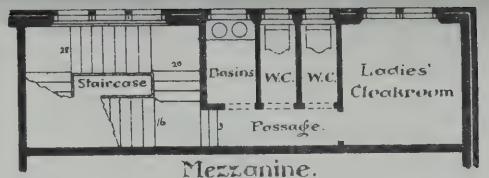


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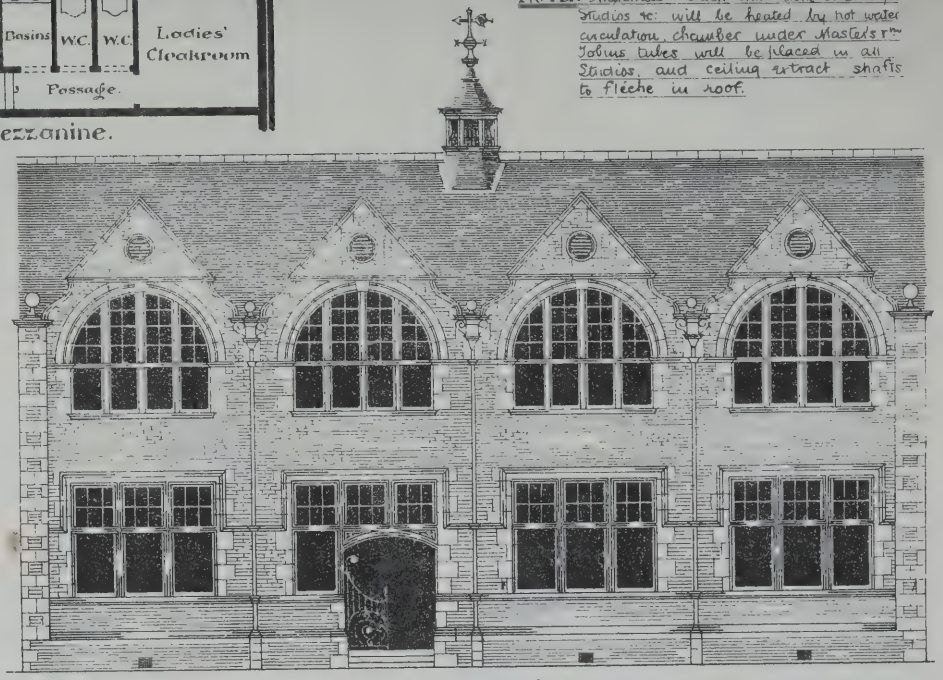
Ground Floor.





Mezzanine.

NOTE. Materials Brick and stone dressings. Studios &c: will be heated by hot water circulation, chamber under Master's room. Tobins tubes will be placed in all Studios, and ceiling extract shafts to fleche in roof.

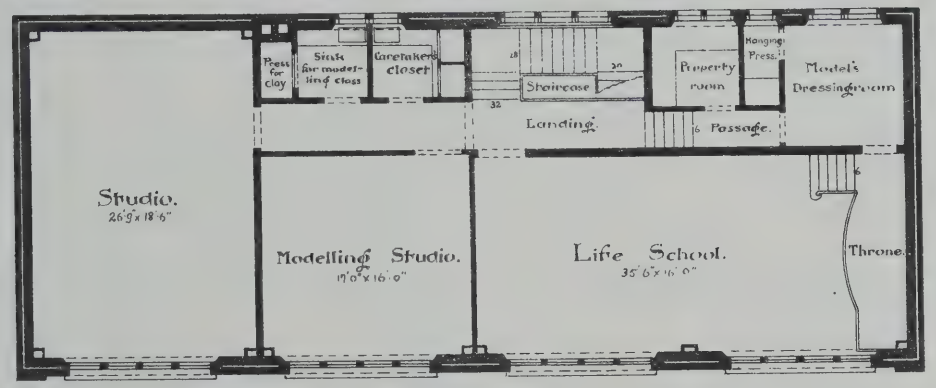


Front Elevation.

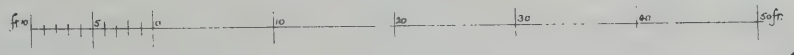
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Upper Floor.

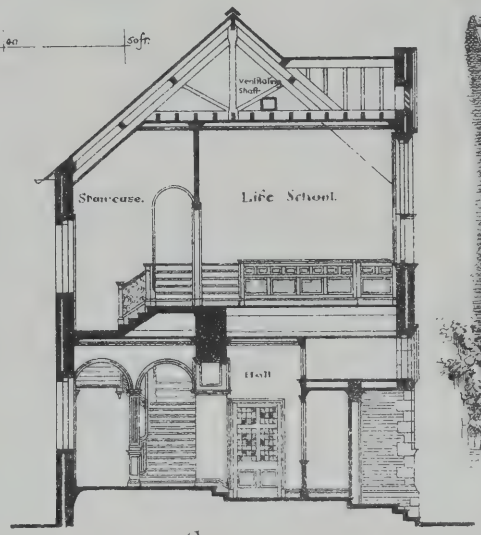


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SESSION 1890-91.

A VILLAGE ART SCHOOL.

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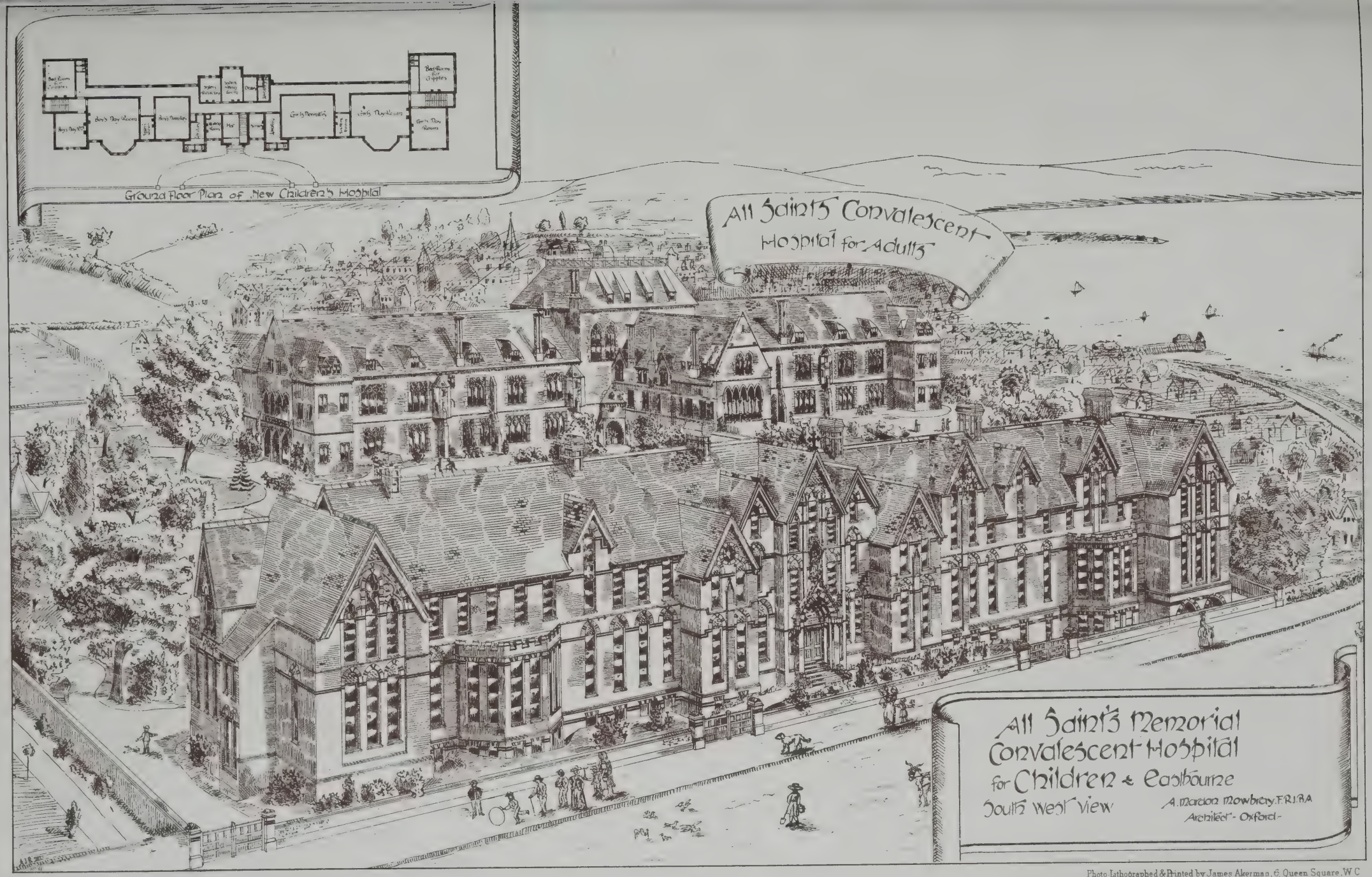


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